

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

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Charting the Trade Association's Future

TRADE associations had their innings at Washington last week. Several hundred representatives of these organizations, from all parts of the country and all lines of industry, assembled to confer with the Department of Commerce on the functions and future of the trade-association movement.

Many traveled to Washington to learn how they could maintain "open price" reports and not get into trouble. They were told that this feature of association work is in the "twilight zone" and that the government will not participate, even to publication of results, in such activities. Mr. Hoover was final and emphatic on this point. He did not say that open price reports are illegal or that they are legal, but that they are of doubtful value and open to so grave misuse that any who resort to them hereafter are "skating on thin ice."

Other types of statistics the associations are urged to maintain and the Department of Commerce is ready and willing to help along lines that are clearly not of doubtful application.

"The State, It Is I"

WHEN a French King made the bold declaration: "The state, it is I," there was some truth in the words he enunciated. Today the President and the Attorney General are quite well aware that neither they nor the rest of the Cabinet, no, nor the Congress itself, is the state. So long as law endures, ours is a government of laws and not of men. Some laws may be repealed by Congress, some may be revised by constitutional enactment, but while they last they are enforceable without the action of Presidents, Attorney Generals or Congressional committees and none of these can singly or together absolve even the meanest of citizens from the consequences of violating the law as it stands.

Consequently though all the executives in the nation combine to bring the mine workers and operators together into interstate council they cannot relieve them from responsibility for their actions to the federal courts. For a while it was believed that it was safe to listen to the President and his Cabinet, especially when both were backed almost unanimously by Congress, the press and the people.

The mine workers and operators believed that it was the prudent matter to heed such an appeal. They did so, and then Judge Anderson revealed the fact that all the wishes of all the people were as nothing as compared with the laws on the statute books. We do not know whether his interpretation of the law has validity—that must be left to the superior courts—but this is certain, that the laws and not the wishes of the executives and legislative bodies determine what it is safe to do.

Nor can one be guided by clamor. The cries of the marketplace cannot always be heeded with safety. There is no guide but the law, and there is no certainty of the

law till the courts have spoken. The operators have learned their lesson. They are waiting on the court. If the contract so often broken by the mine workers is an offense against United States laws the contract is in that matter against public interest and invalid, and the duty of the operators is so to regard it.

No Time to Mediate

A PHILOSOPHER once declared that there is a time for all things, and while he did not mention arbitration among the many things he specified, it is truly one of those things for which there is a time, as one Henry Ford learned when he sent the message to Europe: "Out of the trenches by Christmas."

This is said because editors of the daily press are quite generally disposed to advocate immediate arbitration of the strike controversy. Some declare that the action of Theodore Roosevelt furnishes both a precedent and a good example. It will be remembered, however, that he waited twenty-three weeks before acting and that, furthermore, the issues involved were not then as large as they are today. Consequently the period of meditation that should precede effective mediation did not have to be so long.

Just now arbitration between mine owners and operators would not bring any nearer the end of the coal strike. Capital, if it agreed to arbitrate, would abide by a decision even if it believed it ill-advised, but the mine worker would not accept an adverse judgment. It is useless to suggest that he be tried out and not condemned unheard, for he has been tried already, many times. In 1919 the Fuel Administration, being recalled to act in an arbitral capacity, provided for an increase of 14 per cent in the mine workers' scale over war wages.

The mine workers would have no such settlement, and so, of course, another method of determining the wage was provided. If an independent arbitrator does not find the mine workers willing to accept his decision, get a board to decide the matter in such a manner that they will accept—thus arguing, President Wilson appointed the Bituminous Coal Commission, which gave an increase of 27 per cent over the war-time wage.

But even this did not please the mine workers. After they had returned to work they got to thinking the matter over. "Only 27 per cent increase above war wages," they cried, "and even that increase not equally distributed!" They went back to work eventually, but only when the day workers had been conceded an increase of \$1.50 a day over the \$6 set by the commission and \$2.50 a day over war wages.

In the end, therefore, the last series of strikes was not settled by arbitration but by private agreement. The issue had been arbitrated twice and had to be fought out eventually by other methods. As a matter of fact the psychology of the two parties was changed

oy the time the strike ended. The mine workers were just a little less expectant and greedy than they had been, and the long strike, having depleted the coal piles, had raised prices and made the operators not exactly willing to pay more for labor but not so resistant as they had been. In Washington State last year the wages of the men were submitted to an arbitration board, but the strike continued after the award was made.

In Nova Scotia, after a wage-agreement dispute, an arbitration commission was appointed. The mine workers refused to accept the decision which was known as the Gillen award, U. E. Gillen, of Toronto, being the chairman of the commission. Thus repulsed, the British Empire Steel Corporation agreed to meet the men and made a concession to them which a majority of the mine workers' representatives accepted.

The men rejected the new scale by a large majority, however, and, going back to work at the Gillen-award wage, which was all the company would pay, proceeded to "strike on the job" in accordance with the advice of the secretary of the district union. The men decided to reduce their work per day so that it would square with the reduction in their wages. It now has been arranged to recall the Gillen committee and ask it to review its decision. In short, the cards are to be shuffled again. Maybe the mine workers' hand this time will be such that they will be willing to play. If not, another shuffle is in order. The mine workers must have aces, kings, queens and jacks or they do not play. Thus does it happen when a decision is given for which the mine workers have not been prepared. They refuse to accept it. It is not well to try to mediate or arbitrate until there is some hope that the decision will be regarded as final. The union workers have had months of idleness and have suffered much, but they still believe with great conviction that they can resist deflation of their wages. They still refuse to believe their cause cannot win. For this reason their leaders are afraid to counsel a conciliatory course.

Mediation or arbitration can be successful only when its sole function is to make less painful a submission to conditions to which the mine workers will come after long privation to believe is inevitable. So long as they are convinced that they can get all for which they ask, administrators, commissions, arbitration boards and conferences will be but in vain.

How Long Does It Take to Grow Old?

WHEN first erected Marianna was the leading coal-mining plant in the United States, being constructed according to the most advanced plans of its day. The specially designed product of the best mine-equipment houses in the country was installed. The firms that furnished Marianna were among the leaders in mechanical construction for coal mines.

Yet after ten to fifteen years of use this equipment has been found so inadequate that it has been replaced. The tippie has been rebuilt, the fan and hoist have been displaced and from the electrical development installed the company expects to make 50 per cent per annum of profit. Of course that is not 50 per cent on the cost of the product but 50 per cent on the equipment, a much smaller amount.

These facts make one wonder if the factor of obsolescence is put high enough in the coal-mining industry.

No one can consider Marianna an exception save in the boldness of its past and present owners. Other plants obsolesce as Marianna has done, but as long as the machinery will turn, whether for profit or loss, it is allowed to go on turning, though the savings of new machinery would pay for its installation within a few years.

Automobile manufacturers, we are told, allow 10 per cent per annum for obsolescence. That is a big figure but altogether inadequate in an industry which has two ways in which to grow old—in the product and in the machinery by which it is produced. When the product changes the machine becomes obsolescent, even if its method of manufacturing the product remains up to date. But this is true also of mining. The sizes of the coal produced change, the degree of cleaning desired varies, the need for power increases or decreases, and when the end sought changes, the means become obsolete perhaps even more rapidly than the machine itself.

For this reason a large fund should be set aside for renewals. Only by the fact that we in America have not been content to wait for a machine to wear out have we kept down our costs. Only because Europe has had in view a half century of use when equipping its plants has it fallen behind in the race. A 15-per cent obsolescence charge would seem justified so long as the present progress continues.

If this is doubted, run over in your head the advances in mining in the last few years: The multivane fan, the electric hoist, the skip, the vibrating screen, the step screen, the rotary dump, the cager, the trip maker and feeder, the storage equipment, the safety hoisting devices, the loading boom, the improvement in box-car loaders, the car retarders under the tippie, the picking table for cleaning each car individually, the sampler, the concentrating table, the thickener, the filter, the flotation cell, pulverizing equipment, the gravity separation tank, the air jig, the storage-battery locomotive, the combination locomotive, dynamic braking, the retarding conveyor, the belt and apron conveyor for the product of one or several mines, the arc-wall coal cutter, the unloading device for mining machines, the coal loaders, the heading machine, the room hoist, the cement gun, the portable compressed-air machine, the coal and rock drills, electric and air-driven, the large stripping shovel, the air-dump car, the electric safety lamp, the oxy-acetylene and electric welders, the automatic starting devices, the automatic reclosing circuit breakers, the bearing thermostats, the centrifugal pump and a number of others.

Some may pass away with time and some have prototypes that predated them, but the industry nevertheless does move and move quickly. Only with a heavy allowance for obsolescence can we keep up with it.

The Leiter plant of the Bell & Zoller Co. as reconstructed well shows what can be accomplished by modernization. When that mine was opened it was regarded as a revelation of mining possibilities. It had for many years labored under the disadvantages of age. With new equipment it is setting new standards of production. Only the owners probably know the loss a retention of the old equipment has cost the company in lowered output and expensive operation. Fortunate indeed are those operators who so keenly realize these facts that they will make the changes which the times demand. With the profits thus increased they look back with regret to the losses which the general conservatism of the industry caused them to suffer.

Fires in Steeply Pitching Southern Anthracite Beds Are Fought With Silt and Water and by Sealing*

Fires in Steep Beds Must Be Extinguished by Flooding with Water from Above—Passageways in Lower Bed with Rock Holes to the One on Fire Are Used to Locate Extent of Conflagration

BY J. B. WARRINER†
Lansford, Pa.

IN THE Wyoming, or northern anthracite, field the beds are of moderate thickness and the pitches are light, but in the southern anthracite field conditions are markedly different. Here the Mammoth bed attains in places a thickness of more than 100 ft., and the average pitch of the measure is 70 per cent. Furthermore, many of the workings are in areas either gobbed or previously mined over and now being reworked. Most of the fires with which I am familiar have occurred in such places and in some cases a situation already difficult has been further aggravated by rolls or contortions of the measures which have doubled the Mammoth bed upon itself, forming what is known locally as "capped anticlines." Some of the accompanying illustrations show what is meant by this term.

Under the conditions above described the extinguishment of fires by sealing and smothering obviously is practical to only a limited extent. Sometimes sealing is resorted to or used in conjunction with other methods, but the plan finally evolved, after much experience with this type of fire, is to fight it from above by means of water. It must be understood that the fires herein mentioned do not ordinarily break out into a blaze or have the normal characteristics of a conflagration. Rather they are smoldering or creeping fires which, having a limited air supply, advance slowly through the gob and burst into a blaze only at points where an ample quantity of air reaches them. Such fires are often difficult to detect until they have spread over large areas. In recent years the Lehigh Coal & Navigation Co. has employed fire patrolmen to go through the workings each night after the miners are out in an endeavor to locate before it gets any real headway any fire that may have been started.

FIRES START YEARS AFTER PLACES HAVE CAVED

Naturally, many of the fires are of obscure origin. In many instances they are not discovered until years after the completion of the workings in the areas where they occur.

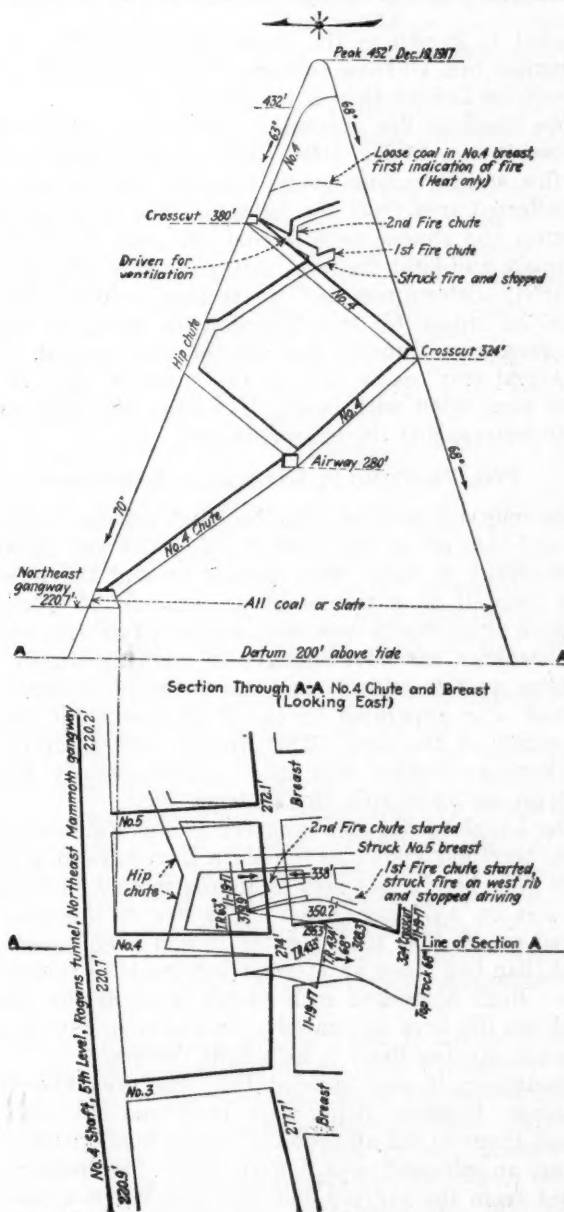
I have stated that the finally accepted method of fighting such fires is to attack them with water from above. This is done either by pouring it in at the crop or from an upper level, or by driving chutes up in one of the small underlying beds and crosscutting by means of rock holes or small tunnels to the big vein above the fire. In any case such passages have to be driven, for only in this way is it possible to explore the fire area thoroughly and determine its extent. Without such exploration it is difficult to feel assured that the fire is entirely out.

*J. B. Warriner's discussion of Douglas Bunting's paper on "Mine Fires Extinguished by Sealing." Mr. Bunting's address was delivered before the American Institute of Mining and Metallurgical Engineers, at Scranton, Pa., Sept. 12, 1921, and was republished in *Coal Age* under the title "Detailed Description of Fight Against Two Mine Fires," Vol. 20, pp. 373-376.

†General Manager, Lehigh Coal & Navigation Co.

To do this many yards of chutes, headings and tunnels have to be driven.

To illustrate the methods pursued in fighting mine fires under the conditions outlined, brief descriptions of three such fires will be given—one at the Lansford colliery and one at the Coaldale colliery, both in the main dip of the Mammoth vein, also one at Rahn colliery



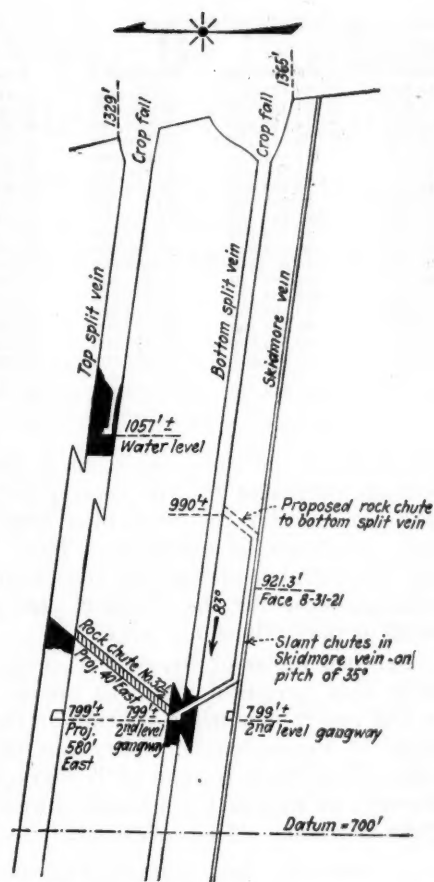
then be poured onto it from these chutes. A pump has been placed at the ditch on the gangway, which with that pumped to the outcrop will furnish all the water necessary to use on this fire. Owing to the fact that the pillars have been removed, the fire cannot be sealed. Several days after the fire was discovered in chute No. 33, a hot spot was noticed along the outcrop at a point 2,000 ft. east of this chute. No one knows whether this is another fire to be fought. It may be merely an extension of the fire in the old gob of the robbed area. The work expended in subduing the fire in breast No. 160 to date has cost \$84,000. This

sum does not include all the expense of driving special tunnels, etc., in the Springdale workings, for by this work coal was won from a part of the fire area.

Mine fires in heavily pitching beds are dangerous, as gas and other natural obstacles make it difficult to get material to the point where it is to be used. In fighting them, moreover, men are quite likely to fall down the steep breasts. It is difficult to carry a ventilating current up a 6 x 8-ft. rockhole while it is being driven. Furthermore if an explosion occurs, it is extremely difficult for the men to escape.

THE OBJECTS OF new investigation being undertaken by the Bureau of Mines at the Pittsburgh experiment station on the determination of composition of gases arising from a thin fuel bed are: By blowing air at known rates through a fuel bed of known thickness, formed from anthracite, coke or bituminous coal, to find out the quantity and composition of the gases above the fuel bed, and so show how much air must be admitted to burn their combustible constituents.

AN INVESTIGATION OF the loss of anthracite in underground operations is being conducted by the Bureau of Mines, the field work being performed by Charles Enzian, consulting engineer. The following-named sources of loss are being studied: (a) Pillars left for support of the roof; (b) boundary pillars called for by law and otherwise; (c) unavoidable losses in mining; (d) avoidable losses or waste in mining, and (e) probable average percentage of losses from all causes.



CROSS-SECTION THROUGH ANOTHER BREAST IN RAHN COLLIERY

Fire was found to have entered this breast, which is No. 33. This drawing shows a chute that is being driven in the Skidmore bed to get above the burning coal. This chute appears to be driven almost vertical, but as it lies at an angle to the plane of the paper the grade is only 35 deg. Another rock chute will be driven from the Skidmore to the bottom split of the Mammoth. When completed the real fire fighting will commence, unless the chute runs into the fire itself.

Reports and Investigations State Geological Surveys and Mining Bureaus

Pennsylvania's Largest Coal Reserves Located in Greene County

BY JOHN F. REESE*

GREENE COUNTY contains the greatest coal reserve of any county in the State of Pennsylvania. Five beds are of economic interest and have been used in calculating the quantity of coal in the ground. These, in order of present importance, are the Pittsburgh, Sewickley, Waynesburg, Washington and Freeport beds.

Mining and prospecting of the Pittsburgh coal has furnished measurements of its thickness in several places and these together with data from contiguous areas in West Virginia, make possible a fairly reliable computation of the quantity yet available. The Pittsburgh bed underlies all the county except a narrow strip along the Monongahela River.

Sewickley coal underlies practically the whole county, being exposed only in the southeast portion and at the mouth of Ten Mile Creek. Mines on the outcrop and measurements from adjacent localities of West Virginia furnish the only data for computing the tonnage. An average of 20 in. of thickness has been used in townships for which no measurements can be obtained. This coal is thickest in the southeast portion of the county and thins out rapidly toward the north and west.

Numerous sections from the extensive outcrop of the Waynesburg coal and data from reports of the West Virginia Geological Survey give a fairly accurate basis for computing the thickness of this coal. This bed is broken by many partings and at present is used only locally. It will not be mined extensively for commercial use until railroads are built into the county or the Pittsburgh and Sewickley beds become more nearly exhausted.

A fair amount of data regarding the Washington coal is available from measurements of the outcrop in the eastern portion of the county and from its occurrence in West Virginia on the south and west. This coal is mined for local domestic use throughout the area where it outcrops. The bed is badly broken by partings, is very dirty, and is mined only because of local convenience. Therefore, until necessity demands, it will not be utilized much more extensively than now. A thickness of 2 ft. has been assumed in computing the quantity in those townships for which no measurements are available.

Little is known of the Freeport coal in Greene County except that the records of churn drill holes show coal at its horizon. The thickness along the Monongahela River is known from records of core drilling. This bed lies about 600 ft. below the Pittsburgh coal; it does not outcrop and so is assumed to underlie the whole county at considerable depth and with unbroken continuity. In computing the quantity a thickness of 30 in. has been used in all townships. The recoverable quantity has

*Pennsylvania State Topographic and Geological Survey.

TABLE I. SUMMARY OF RECOVERABLE COAL IN GREENE COUNTY
(In Net Tons)

Township	Pittsburgh	Sewickley	Waynesburg	Washington	Freeport	Total
Aleppo.....	106,475,760	41,922,000	59,180,400	50,306,400	31,441,500	289,326,060
Center.....	224,206,200	78,030,000	141,827,175	93,636,080	58,522,500	596,221,875
Cumberland.....	245,342,845	77,838,750	114,255,425	18,360,000	46,473,750	502,270,770
Dunkard.....	166,906,170	99,488,250	36,762,075	9,180,000	36,949,500	349,285,995
Franklin.....	194,398,740	63,112,500	124,316,325	55,080,000	47,277,000	484,184,565
Gilmore.....	94,847,760	31,537,125	56,763,000	41,126,400	25,704,000	249,978,285
Greene.....	116,246,340	40,738,160	53,978,400	14,688,000	22,032,000	247,682,900
Jackson.....	119,034,000	44,370,000	85,068,000	53,244,000	33,277,500	334,993,500
Jefferson.....	127,937,070	41,248,800	61,419,930	16,524,000	26,277,750	273,407,550
Monongahela.....	97,711,920	49,778,550	15,353,550	3,672,000	20,999,250	187,515,270
Morgan.....	148,523,220	41,310,000	80,588,925	20,196,000	31,212,000	321,830,145
Morris.....	156,125,025	55,692,000	114,971,850	66,830,400	41,769,000	435,368,275
Perry.....	179,478,180	114,300,945	121,059,720	36,720,000	35,113,500	486,672,345
Rich Hill.....	228,276,000	93,024,000	167,638,275	14,518,850	69,768,000	573,225,125
Springhill.....	123,379,200	46,512,000	59,394,600	55,814,400	34,884,000	319,984,200
Washington.....	123,677,550	41,310,000	92,947,500	49,572,000	30,982,500	338,489,550
Wayne.....	199,106,550	99,410,220	141,525,000	75,276,000	47,047,500	562,365,270
Whiteley.....	179,781,120	59,830,650	120,808,800	60,404,400	37,752,750	458,577,720
Totals.....	2,831,453,650	1,119,453,950	1,647,858,950	735,148,850	677,484,000	7,011,399,400

been estimated at 50 per cent of the whole, from which has been deducted 15 per cent for loss in mining. This bed is ranked fifth because its regularity and extent are wholly assumed. Should future prospecting show it thicker and of better quality than has been assumed, this coal may eventually be mined in spite of its great depth. It is possible also that it will rank higher in economic value than the dirty but more accessible Waynesburg and Washington coals.

Other coal beds than these five are mined for local use but as they are not important and little is known of their extent and thickness they have not been included in the computation of the reserves.

The following method was used in computing the coal reserves: A base map for each coal bed was made by tracing its outcrop from the quadrangle maps made by the U. S. Geological Survey. All available measurements of each coal bed, gathered from federal and state reports, mine maps, core-drill records and personal inspections, were plotted on the map of that particular bed at the locality represented. By studying the distribution of the figures, areas of equal thickness were drawn, and by means of a planimeter the area of each coal bed in each township was measured. For calculating the quantity of coal in any area 90,000 short tons per inch per square mile was used.

TONNAGES ALREADY MINED ARE SUBTRACTED

Areas from which coal has been removed were determined from mine maps and plotted to scale on the base maps. The same method as above described was followed in computing the quantity of coal extracted.

Having calculated the quantity of coal originally contained within the area of any bed and subtracted the quantity already mined from it, the probable percentage of each bed that could be recovered in different localities was determined in accordance with engineering experience. This quantity varies from 50 to 100 per cent, depending on the thickness and character of the bed. The quantity of coal computed to be in any bed, multiplied by the assumed percentage of recovery, less 15 per cent for loss in mining, gives the estimated recoverable tonnage.

The result of computing the coal reserves in Greene County based on the latest maps, engineering data, and methods above enumerated is shown in the accompanying tables.

Table I gives the estimated recoverable tonnage by beds and townships. The figures are here given as computed. It should, however, be distinctly understood that while the acreage of each of the beds has been accurately calculated, the reliability of the average

thickness of the coals employed in the computation of tonnage decreases for the several beds given from left to right and for the townships from east to west or from northeast to southwest. Thus, while the figures for the Pittsburgh bed are conservative and probably reliable, those for the Freeport coal may be much too small or many times too large.

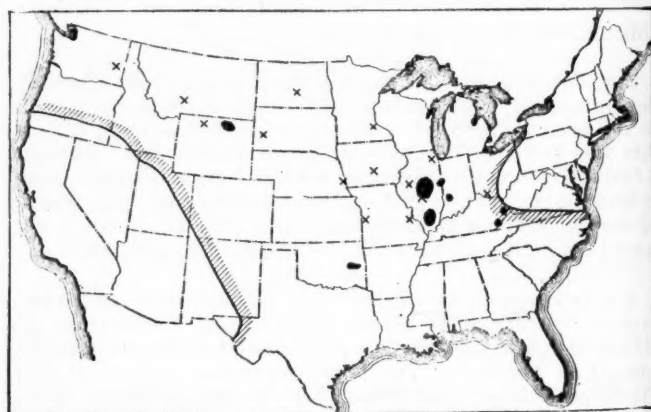
Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in the report now being written on the bituminous coal fields of Pennsylvania. They can be consulted in the office of the State Bureau of Topographic and Geological Survey; or figures for a single township will be mailed from this same office on request.

TABLE II. COAL RESERVES IN GREENE COUNTY
(In Net Tons)

Bed	Original Deposit	Mined Out	Recoverable
Pittsburgh.....	3,919,485,600	39,420,000	2,831,453,650
Sewickley.....	1,393,407,000	2,700,000	1,119,453,950
Waynesburg.....	2,557,242,000	270,000	1,647,858,950
Washington.....	865,880,000	100,000	735,148,850
Freeport.....	1,594,080,000	677,484,000
Totals.....	10,330,094,600	42,490,000	7,011,399,400

Can One Coal Company Cover United States?

THERE are not many coal-producing companies in the United States that sell coal in as many markets as the Peabody organization, with headquarters in Chicago. With mines in five states—Wyoming in the West, Arkansas in the South and eastern Kentucky in the other direction, in addition to huge properties in Illinois and Indiana—the Peabody Coal Co. sells coal in all but 17 of the 48 states, according to data submitted to *Coal Age* and shown in the accompanying map. To distribute the coal from its mines, 14 sales offices in 11 states are maintained.



MARKET TERRITORY REACHED BY PEABODY COAL CO.
Shaded lines indicate limits of market territory. Solid black areas show locations of mines. Crosses represent sales offices.

Should Power Be Purchased from a Central Station or Generated at the Mine Where It Is to Be Used?

Calculations Under Certain Assumed Conditions Show That Generated Power Is the Cheaper—The Only Consideration Favoring Purchased Current Under the Assumptions Made Is a Saving in Investment

By E. STECK*

MINE operators frequently are called on to decide whether to generate or purchase power. So many elements enter into this problem that it is nearly impossible to solve it without the help of an experienced engineer. Every mine presents a different condition, making it necessary to decide each case upon its own merits. Some of the considerations that must be taken into account are the rate offered by the central station, the reliability of its service, the equipment in use at the mine and the extent of electrification to be accomplished.

To illustrate the foregoing, let us consider two mines, one of which is producing coal with inefficient equipment while the other is a new property intended to produce the same tonnage. At the older operation all the equipment above ground is at present driven by steam engines. The piping from these machines to the boilers is bare and, because of faulty design and installation, leaky joints are numerous.

The average steam consumption is about 90 lb. per indicated horsepower-hour. The following is a list of the drives, the rated horsepower of the engines at 25-per cent cutoff and the estimated number of horsepower-hours consumed per working day of eight hours:

Apparatus Driven	Horsepower of Engine	Horsepower-hours	Pounds of Steam Consumed per day
Shop.....	20	120	10,800
Car puller.....	25	40	3,600
Fan.....	75	600	54,000
Pond pump.....	15	60	5,400
Bottom pump.....	15	30	2,700
Tipple.....	45	210	18,900
	195	1,060	95,400

Reducing the above to the necessary boiler capacity on the basis of 30 lb. of water evaporated per hour at the steam pressure and feed water temperature maintained we have $\frac{95,400}{8 \times 30} = 400$ boiler-horsepower.

If a simple condensing corliss engine direct-connected to a generator were installed and motors were purchased to replace the small engines, not only would sufficient boiler capacity be available to operate the proposed electrical equipment but, as will be shown later, enough to take care of the bottom load also. On the assumption that the corliss engine will produce an indicated horsepower-hour on 20 lb. of steam, the boiler-horsepower required to produce the requisite 1,060 hp.-hr., allowing 5 per cent for line loss, an efficiency of 93 per cent for the engine and 91 per cent for the generator, would be

$$\frac{1,060 \times 20}{0.91 \times 0.93 \times 0.95 \times 8 \times 30} = 110,$$

thus showing a saving of 290 boiler-horsepower.

In this particular mine cutting machines, haulage

and gathering locomotives were to be installed. From the data at hand the average load that would be imposed by this equipment was found to be 175 kw., the maximum being 375 kw. Reducing this load to the necessary boiler-horsepower, using the same engine to supply energy to both the top and bottom, we would have

$$\frac{175 \times 20}{0.91 \times 0.93 \times 0.746 \times 30} = 183 \text{ boiler-horsepower.}$$

Thus it would require 183 + 110, or 293 boiler-horsepower, to carry the load both above and below ground, and as there would be released 290 boiler-horsepower by replacing the smaller engines by the one large unit, no additional boiler equipment would be required. Furthermore, there would be a saving in the tonnage of coal burned even with an additional average load of 175 kw.

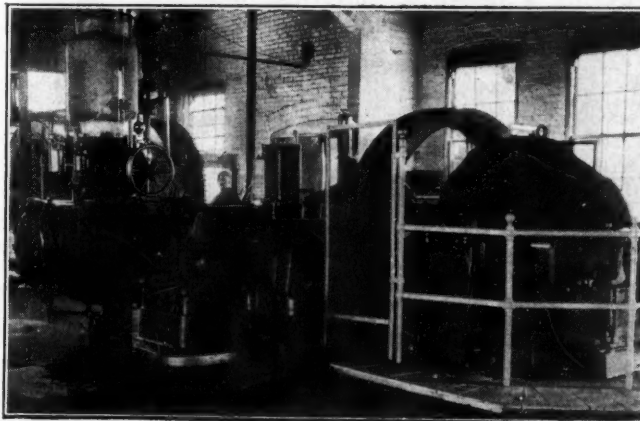
The size of unit required to handle this load of 175 kw.

$$\text{for the bottom and } \frac{1,060 \times 0.746}{0.95 \times 8} = 104 \text{ kw. for}$$

the top would, of course, be the sum, or 279 kw. The maximum load on the generator would be made up of 175 kw. on top and 375 kw. on the bottom, or 550 kw. in all, but, allowing for the overload capacity of the unit and the diversity factor of the combined load, a 400-kw. generator would be able to do the work.

To accomplish the same results with purchased energy where the power company furnishes 3-phase 60-cycle 2,300-volt service, it will be necessary to use a motor-generator set for carrying the bottom load, with transformers on the surface.

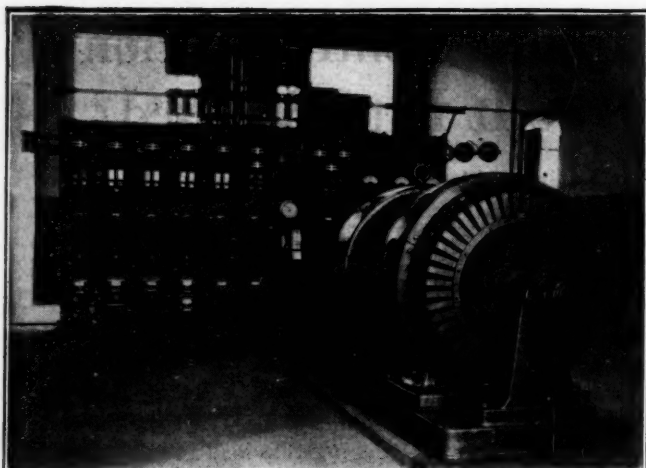
In arriving at a comparison of the cost of current per kilowatt-hour it must be borne in mind that on



ISOLATED POWER STATION, SHOWING MAIN STEAM UNIT

The price of purchased power, the adequacy of the supply and the up-to-date character of the steam plant determine largely whether power shall be purchased or made by the isolated power plant.

*28 E. Jackson Boulevard, Chicago, Ill.



PLANT USING CENTRAL-STATION POWER

The manufacture of electricity is an industry in itself and some operators and mine managers regard it as a difficult matter to take up as a side issue. To them it seems that the short, if not always the best, cut is to purchase power and so avoid steam troubles.

account of the central-station service being measured on the 2,300-volt line, purchased energy necessary to drive the top motors will be equal to the requisite generated power plus the amount lost in the transformers. That necessary at the bottom will be the amount actually necessary to drive the machines plus the losses in the motor-generator set.

In order to arrive at a basis for computing the cost of a kilowatt-hour the monthly consumption should be considered. A fair basis for normal operation would be twenty working days per month. For the top equipment we have 1,060 hp.-hr. per day at the point of application, or 832 kw.-hr. at the generator and 878 kw.-hr. on the power company's service line. The kilowatt-hours for the bottom carried on the mine power plant would be equal to 175×8 , or 1,400 kw.-hr., while on the power company's line this would be 1,400 kw.-hr. divided by the efficiency of the motor-generator set, or 1,750 kw.-hr.

An idle day load of eight hours for the top would be approximately 550 kw.-hr. for generated and 600 kw.-hr. for purchased power. The bottom load would be about 400 kw.-hr. on the generator and 750 kw.-hr. on the service line. The night load would be 940 kw.-hr. for generated and 1,050 kw.-hr. for purchased power.

During a month of thirty-one days the total consumption in kilowatt-hours would be as follows:

Period	Power Company's Energy	Generated Energy
20 working days.....	52,560 kw.-hr.	44,640 kw.-hr.
11 idle days.....	12,870 kw.-hr.	10,450 kw.-hr.
31 nights.....	32,550 kw.-hr.	29,140 kw.-hr.
Total.....	97,980 kw.-hr.	84,230 kw.-hr.

In order to use purchased power an investment would be necessary in a 300-kw. motor-generator set and three 75-kva. transformers. These would cost about \$11,000, which would add to the total monthly bill for purchased power approximately \$140 for interest, depreciation, taxes, maintenance, etc. The maximum demand when using purchased power would be approximately 530 kw. Thus the power bill would be as follows, assuming 530 kw. as a maximum demand and a 97,980 kw.-hr. consumption:

PRIMARY CHARGES		
First 200 kw. @ \$1.60 =	\$320.00	
Balance 330 kw. @ 1.30 =	429.00	
		\$749.00

SECONDARY CHARGES

First 1,000 kw.-hr. @ \$.04 =	40.00	
Next 2,000 kw.-hr. @ .0265 =	53.00	
Next 2,000 kw.-hr. @ .0195 =	39.00	
Next 20,000 kw.-hr. @ .0115 =	230.00	
The remaining 72,980 kw.-hr. @ .0095 =	700.61	
Total.....	\$1,062.61	
Less 10 per cent.....	106.26	
Additional (above-mentioned fixed charges).....		956.35
97,980 x 4 x (2.75-1.25) =		140.00
*Coal charge 2,000		\$1,845.35
		293.74
Total.....		\$2,139.09

*An extra charge at the rate of 4 lb. per kilowatt-hour is made for coal when this costs over \$1.25 per ton.

The investment necessary for the generation of power at the mine will be approximately \$36,500, creating a fixed charge of about \$455 per month. The cost of extra labor, oil, waste and boiler-room maintenance will be \$175. Allowing 7 lb. of coal per kilowatt-hour at a price of \$2.75 per ton, the cost of coal for generating 84,230 kw.-hr. will be \$810. Thus the total monthly power bill will be \$1,440, or 1.71c. per kilowatt-hour.

A word of explanation is necessary in regard to the manner in which these results were obtained as well as their significance. No interest, depreciation or taxes were included on the boiler-room equipment, as it will be unnecessary to buy any additional apparatus of this type in order to operate the electrical plant. However, labor and maintenance cost for that portion of the boiler plant required to operate the electrical equipment is included in the above figures.

While the rate per kilowatt-hour for the generated power is only 78 per cent of that for purchased power, the amount of current necessarily generated is only 82½ per cent of that purchased for the same amount of useful energy delivered to the electrical equipment. This accounts for the bill for generated power being only 67½ per cent of that for purchased power and the difference in the net power bills being \$699.09 per month.

WITH A NEW MINE EQUIPMENT COST IS LARGER

If this were a new mine it would require an investment of about \$15,000 additional in boiler equipment, and it would therefore be necessary to charge an additional \$150 per month for boiler-room maintenance, interest, depreciation, etc., to the power bill of \$1,440 mentioned above. This would make the total bill \$1,590 per month, or 1.89c. per kilowatt-hour.

A summary of the results obtained above would be as follows:

	Cost of Equipment Required*	Kilowatt-Hours Per Month	Cost of Power Per Kilowatt-Hour	Possible Saving Per Month	Possible Saving Per Year
Purchased power.....	\$11,000	97,980	2.12c.	\$2,139	
Generated power, old mine.....	36,500	84,230	1.71	1,440	\$8,388
Generated power, new mine.....	51,500	84,230	1.89	1,590	6,588

*This does not include cost of distribution or application.

In this particular case the owner of the old property by making an additional investment of \$25,500 over that required for purchased power can earn \$8,388, or 31.6 per cent, upon it yearly. In the case of the new property, an additional investment of \$40,500 earns \$6,588, or 16.2 per cent.

When the output of either mine is reduced conditions are changed, the fixed charges remaining the same but the operating expense and consequently the cost per kilowatt-hour varying markedly. Suppose the number of kilowatt-hours is cut in half or, in other words, that 48,500 kw.-hr. are purchased. The bill then becomes, with 530 kw. as a maximum demand and 48,500 kw.-hr. of total consumption:

PRIMARY CHARGES				Totals
	Kw.	Rate per Kw.	Cost	
First	200	\$1.60	= \$320.00	
Balance...	330	1.30	= 429.00	\$749.00

SECONDARY CHARGES				
	Kw.-Hr.	Rate per Kw.-Hr.	Cost	
First	1,000	0.040	= \$40.00	
Next	2,000	0.0265	= 53.00	
Next	2,000	0.0195	= 39.00	
Next	20,000	0.0115	= 230.00	
Balance	23,500	0.0096	= 225.60	
			\$587.60	
Less 10 per cent.....			58.76	528.84
Fixed charge on motor-generator set, etc.....				140.00
				\$1,417.84
Coal charge $48,500 \times 4 \times (2.75 - 1.25)$				
	2,000			145.50
Total.....				\$1,563.34
Cost per kilowatt-hour.....				3.22c.

The cost of generating power at the old mine under the conditions above assumed becomes:

Fixed charge, engine room.....	\$455
Labor, oil, waste and boiler-room maintenance.....	175
Coal $42,100 \times 7 \times 2.75$	405
2,000	Total..... \$1,035.00
	Cost per kilowatt-hour..... 2.46c.

For the new mine the total expense calculated as above would be \$1,185 per month, or 2.82c. per kilowatt-hour.

A comparison of the results above obtained would then be as follows:

	Cost of Equipment Required	Kilowatt- Hours Consumed	Cost of Power— Per Kilo- Per Month Watt-Hour		Possible Saving Per Year
Purchased power.....	\$11,000	48,500	3.22c.	\$1,563.34	
Old mine.....	36,500	42,100	2.46c.	1,035.99	\$6,340.08
New mine.....	51,500	42,100	2.82c.	1,185.00	4,540.08

Under the conditions above assumed the owner of the old property earns 24.8 per cent on the additional investment required for operating his plant electrically while the owner of the new property can realize only 11.3 per cent. The only consideration in this particular case favoring the purchase of power is the smaller initial investment necessary.

The mine owner before deciding on whether to purchase or generate current should obtain the opinion of an engineer who is familiar with the power requirements of mines, the cost of generating energy and the application of the central-station rates. The reliability of the central station in furnishing uninterrupted service also should be carefully investigated, as shutdowns arising from a failure of power are extremely costly.

Self-Dumping Cars Traveling on Loop Track Aid Slate Disposal and Coal Discharge

BY ALPHONSE F. BROSKY

AT NO. 1 mine of the Jefferson Gas Coal Co., of Pittsburgh, Pa., the coal is handled in an unusual way. This operation, which is practically automatic, is located at Penowa, Washington County, Pa., on a spur of the Pittsburgh & West Virginia R.R. Here the Pittsburgh bed, with an average thickness of 5½ ft., is being worked. The holdings cover 700 acres, lying under two hills at an elevation of approximately 90 ft. above the railroad siding. The ultimate output of this mine will be 1,600 tons daily, and the arrangement is such that only seven men will be required on the surface to handle and load the coal as well as to unload the slate. The crew, when the plant is running at capacity, will include one weighman, one conveyor and feeder operator, three trimmers, one man to drop



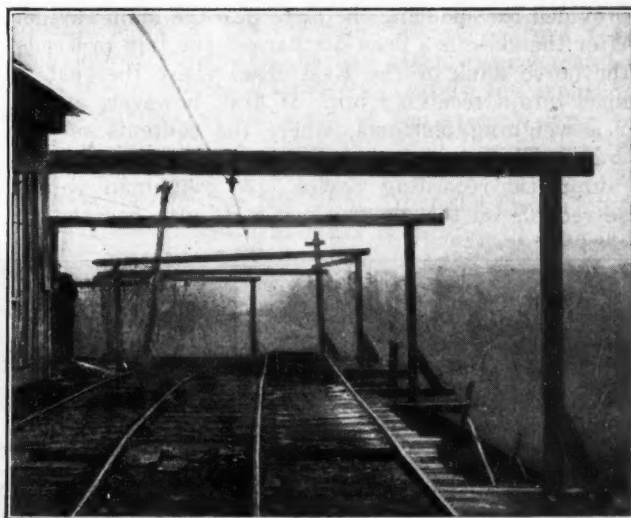
TIPPLE, CONVEYOR SHED AND RAILROAD SWITCH

The receiving bin is located 90 ft. above the elevation of the railroad track. The structures are not complete as neither tipple nor conveyor are roofed. There are three loading tracks under the tipple. Note the trip at the top of the hill.

railroad cars and one handy man to be used as needed.

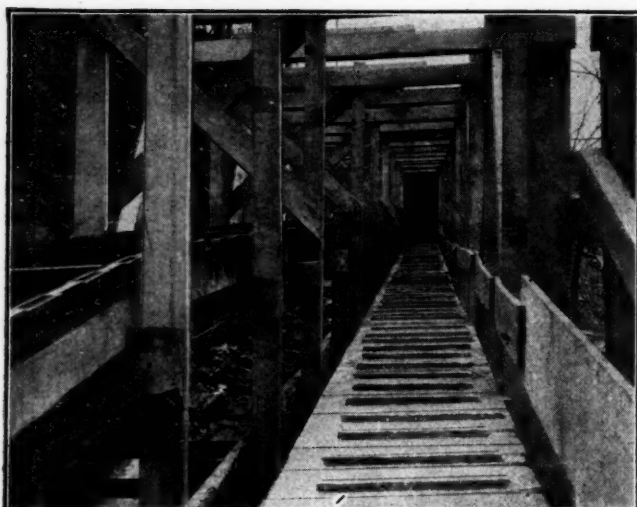
The greatest dimension of the property extends practically east and west. To simplify this description I will designate the two hills comprising the property as the East and the West hills. One-way haulage will be followed after the entries have been driven far enough to complete the circuit. A main-face entry is now being driven to split the East and the West hills in a north and south direction. Butt entries are being driven under the East Hill to meet the main-face roadway. At present the West Hill has not been developed. Trips will always travel in a counter-clockwise direction, loads moving along the main butts while the empties traverse the main face entries. By following this plan it is believed that two motors easily can handle 1,600 tons daily.

A ravine which at its lowest point is 70 ft. below the track runs east from the eastern flank of the East Hill.



WHERE COAL IS DISCHARGED FROM CARS TO BIN

Till entry driving is completed the one-way haulage will not be put into effect. At present cars are backed to this point on track shown to left. They are switched onto right-hand track and pulled over the discharge bin being thus automatically dumped by the knuckles or cams which will be noted in the photograph.



LOOKING UP THE CONVEYOR TOWARD RECEIVING BIN

In the construction of this bin posts measuring 4 x 6 in. and 6 x 6 in. respectively are used in alternation. The conveyor is 315 ft. long and will easily handle 1,600 tons daily.

Loads, on leaving the main butt entry, skirt this hill and must of necessity cross this ravine, which gradually deepens to the depth above mentioned where it meets a larger and deeper ravine running at right angles to it. This large ravine is only a short distance from the hill, and the natural depression thus formed is admirably suited to the dumping of slate, and will be utilized for that purpose. A wooden bridge has been constructed spanning the smaller ravine near its mouth.

Automatic drop-bottom cars are used at this mine. Loaded trips containing cars of slate will be stopped to permit of their spotting and discharge at the bridge, after which the trip will proceed to the dumping point of the coal. When the hollow directly under the bridge has been filled, the track will be shifted farther down the ravine.

At first this arrangement will necessitate frequent track shifts, but as the ravine deepens and widens these will occur at longer intervals. When the point of greatest depth is reached the dumping room will be ample to accommodate all the refuse that will be removed from the mine during its entire life. A movable chute will be provided for spouting the slate into the main ravine.

After the slate has been discharged the trip proceeds to the north flank of the East Hill, where the coal is dumped into a receiving bin. It first, however, passes over a weighing platform, where the contents of the several cars are weighed and the weights recorded by an automatic recording device. A weighman enters these records on the weigh sheet. He also has charge

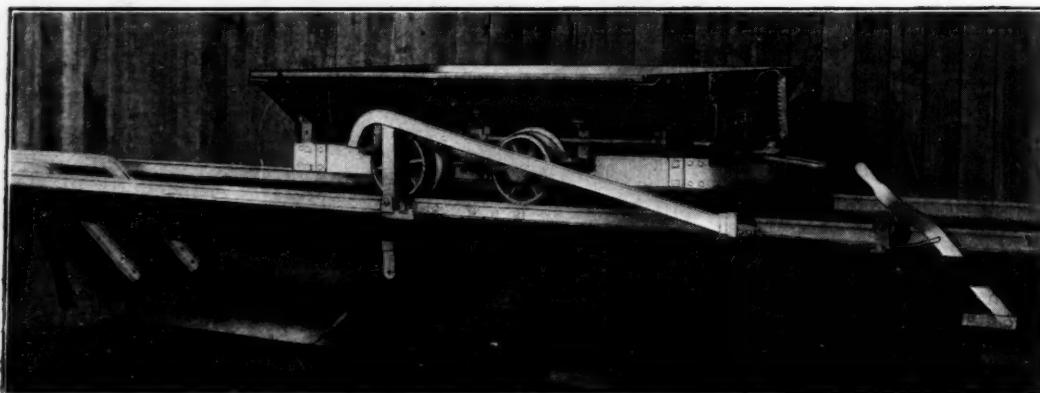
of the substation in which his office is located. The snapper who accompanies the trip lifts the check from the cars as they are being dumped.

The drop-bottom cars employed at this mine are of two-ton capacity, are of composite construction and have roller-bearing wheels. The truck frame is built up of channels and angle irons, secured by brackets which are riveted in place. The body is of oak, reinforced, as is customary, by steel bands or belts. This is a one-way car, in that its bottom may be opened and closed automatically only when it is traveling with its head end forward. Three steel-bottom doors drop open consecutively, beginning with the one at the rear end of the car. The rear door is hinged on the hind axle and is held in place by a trigger. The center door is swung from the front axle and overlaps the rear door when both are in the closed position. When, however, the rear door drops, it releases the center door, allowing it to open also. The same relation exists between the center and front doors, the latter being hinged on a bar extending across the car. It, of course, overlaps the center door.

CAM TRIPS CAR BOTTOM OVER RECEIVING BIN

The trigger which holds the rear door in the closed position is released through the raising of a lever arm at the back of the car. This lever projects beyond the car body on one side and is pivoted on its other end near the car center. The device for raising the lever and thus releasing the trigger consists of an inclined cam rising in the direction in which the car is traveling when passing over the dump. The lower end of this cam passes through a guide and the elevated end is pivoted to a swinging post so arranged that it will not pass a vertical position in the direction of motion of the car but may be tilted in the opposite direction against the force of gravity acting on a counterweight so attached to it as to hold it vertical. A lever fastened to the lower end of the inclined cam by means of a cable, is employed to lower this trigger-releasing device in case cars loaded with slate reach the coal bin. Such cars may thus be passed over the bin without being dumped. The doors are closed by passing over a knuckle. These cars are manufactured by the Sanford-Day Iron Works, of Knoxville, Tenn.

The coal is discharged into a wood bin that is lined with steel plates. Its sides have a slope of approximately 30 deg. and it will hold about 100 tons. From this bin the coal drops onto a feeder of the reciprocating-plate type, by which it is fed to a conveyor. The latter consists of two strands of steel chain fitted with scraper flights at close intervals. This conveyor is 3 ft.



Mine Car and Dump

The inclined cam, so clearly shown in the illustration, raises a lever which in turn pulls a trigger and releases the bottom door at the rear of the car. When that falls the center door is released and that in turn frees the front bottom door, completely discharging the coal.



FULL TRIP CROSSING THE DUMPING POINT

This illustration shows how dumping is normally effected. The trip passes over the dump and each car unloads itself separately and readjusts its doors but without uncoupling or other delay. If there is a slate car all that is necessary is to raise a lever and the car crosses the dump without discharging.

wide and 315 ft. long and runs on a slope of 16 deg. As has been mentioned, the Pittsburgh bed is being mined and as this measure is clean, no picking is necessary. After leaving the conveyor the coal passes over inclined screens, where it may be sized into slack, nut and lump, or be loaded as run-of-mine.

Detecting Use of Matches in Gassy Mines; Match Streak on Gauze Lights Gas*

BY J. H. HAERTTER†
Wilkes-Barre, Pa.

SOME two or three years ago a miner was seriously burned in a gaseous section of Prospect Colliery, where the use of any other than locked Davy safety lamps and Edison electric lamps, safety explosives and blasting batteries was prohibited. Smoking, of course, was strictly forbidden. Near the foot of the main slope was stationed a conscientious, intelligent man who had in his possession a key to open, examine and light all Davy safety lamps when necessary and who, as the men went into the mines in the morning, received from them all matches and tobacco, placing them in a tin box and returning them to the men as they came out at night.

The cause of the explosion was a mystery. I directed that every bit of loose coal in the miner's place be screened over a segment of small mesh. A burned match and a tin box containing tobacco and matches and bearing the scratch of a match were found close to the point where he had fired his last hole. As the miner died on the following day without giving any information these articles furnished the necessary and conclusive evidence as to what had happened.

Less than a year ago a miner and laborer at the Dorrance Colliery who had been warned by the fireboss in the morning that their working place contained gas and who were told to wait until the fireboss could accompany them, disobeyed his order and went into the place, passing a danger board which had been put there in accordance with the requirements of the law. An explosion followed soon after. How could this happen in a safety-lamp district? Inquiry developed the fact that the miner was an inveterate cigarette smoker. Again the loose coal was screened and part of a cigarette and some burned matches were found, thus

clearing up the mystery. The miner died from the burns he received.

As, despite the orders of the fireboss, men would sometimes go to their places without waiting for him to accompany them, the following rule was established: When the fireboss arrives at his station, having completed the examination of his section, he shall telephone to the lamp room on the surface the ticket numbers of miners whose places have been found during his inspection to contain gas. The lampman immediately shall place on each of the lamps of those miners a red ticket which indicates that it must not be given to the miner or laborer. The men whose lamps are so ticketed must remain on the surface until all the other men have gone in. The foreman then shall send home all those who, in his judgment, should not go to their places that day and, entering the mines with the others, shall turn them over to their respective firebosses or to some competent person. This man shall accompany them to their working places and see that all gas is properly removed and that before they begin to work their places are made safe.

On Dec. 2, 1921, only a short time after the accident just described, a miner and laborer were seriously burned when the miner, in a hurry to get enough coal to finish the loading of his last car, and knowing, as he afterward admitted, that there was gas in his place, went up with a naked light, placed it on the gob and proceeded to push the coal down the chute, bringing the gas down upon his lamp.

A FAINT SCRATCH EXPLAINS THE EXPLOSION

On the following day, Dec. 3, gas exploded at the Dorrance Colliery at about 5:30 p.m. Upon his arrival the night foreman proceeded to make an examination for gas and, finding it, was warning the miner and laborer to withdraw from the place when the gas exploded, all three men being burned. What had caused it? Electric and Davy lamps, safety powder and blasting batteries were used, and smoking was prohibited. Surely neither the miner nor the laborer could have been smoking in the presence of an assistant foreman.

The Davy lamps of the miner and fireboss were carefully examined under an electric light in the lamphouse and found to be in good condition. On the following Monday, however, the company officials learned from the gangway miner that he had given several matches to the airway miner a short time before the explosion. Upon a further examination of the miner's lamp by daylight faint marks which indicated the striking of matches on the gauze could be noted when the lamp was held four or five feet away from the eye.

It was then decided to make tests and an explosion chamber was prepared by the company chemist. It consisted of a small tin box with its sides composed of glass doors that would be blown open readily by the force of a gas explosion. The gas was to be admitted to the box by a small tube. A safety lamp which was ascertained to be in good condition was lighted and placed in the receptacle after a match had been struck on the gauze, leaving a streak of white substance behind it. After closing the doors of the box and admitting city gas for a few seconds, the flame was seen to pass through the gauze, and an explosion took place, forcing the glass doors open. Examination of the gauze after the explosion showed only a faint mark at the place where the match was struck, for the substance thus caused to adhere to the gauze was completely burned.

*Excerpt from article entitled "The Gas Explosion, Its Cause and Remedy," in Lehigh Valley Coal Co.'s *Employees' Magazine*, April, 1922.

†Division superintendent, Lehigh Valley Coal Co.

Frog, Guard Rails and Fishplates Cast as Unit Save Mine Trips from Wrecks

A TYPE of flanged rail frog made of steel casting, which it is asserted overcomes many of the shortcomings of the older type, was recently placed on the market. The frog is shown in the accompanying illustration.

When the ordinary frog built up of rail sections riveted to a base plate is employed, not only is this composite unit required but a guard rail and several pairs of fishplates as well. The guard rail works fairly well when the wheel gage is fixed, as when both wheels are attached rigidly to the car axle, but sometimes gives trouble when one or both wheels are loose and the gage is thus more or less variable. Under such circumstances the wheels sometimes "split the frog"—that is, part of



GUARD RAIL AND FROG MADE INTO ONE

By combining the guard rail and the frog the distance between the two is regulated and made constant. The guard rail not being dependent on spikes does not pull loose. The frog and the rail being connected directly by bolts, irregularities in the track are guarded against and consequently the frequency of derailments is reduced.

the car trucks take the frog correctly while some do not, frequently resulting in a more or less serious wreck.

The flanged frog, on the other hand, combines the guard rail with the frog, placing it where it will be the most effective. Thus with a frog of this kind it makes little difference whether the wheel passing is tight or loose on its axle; the flange guides it through its proper course in any event.

In addition to this feature the frog here shown requires no fishplates to join it to the rails. The extremities of the frog are so shaped that the rails lie alongside and are bolted direct to them. This simplifies the connections while simultaneously securing a strong and efficient joint. This device, known as the Graham flange frog, is made and sold by William Wharton, Jr., & Co., Inc., of Easton, Pa.

Charcoal and Its Related Products

WOOD charcoal, one of the purest forms of carbon, is of importance principally in the manufacture of charcoal iron. The production of charcoal for this purpose, says the *Commerce Monthly*, formerly was a distinct and important industry, but it has gradually been superseded in recent years by the expansion of the wood-distillation industry, of which charcoal is but one of many products.

Other uses of charcoal are numerous and important. The manufacture of black gunpowder and blasting powder requires about a million and a half bushels annually. In making crucible steel it may be used to provide the necessary carbon, and a small amount is used as a dry color in paint manufacture. The porosity of wood charcoal gives it the power of absorbing certain gases. For this reason it is often employed as a

disinfectant and it also has medicinal value. This property and its power to remove coloring matter from solutions make charcoal valuable as a filtering medium, since it removes objectionable organic matter and to some extent softens hard water. Charcoal as a domestic fuel has in large part been superseded by gas, electricity and kerosene.

Charcoal is manufactured by two general methods: First, the charring of hardwood either in earth-covered pits or in brick kilns, without making any attempt to save the escaping gases, and, second, as a product of the wood-distillation industry. By the latter method wood is charred in ovens or retorts, and the gases are collected in condensing chambers. This method is now being generally adopted because of the value, especially during the war, of the chemicals obtained.

The chemicals obtained as byproducts in the distillation of wood are so numerous and valuable that they are now worth much more in the aggregate than the charcoal, so that the production of charcoal has been to a great extent subordinated to the production of chemicals. This was particularly true during the war, when the demand for these chemicals was urgent on account of their use in the manufacture of war materials. The consequent increase in the charcoal output of the wood-distillation industry and decline in the output of the charcoal industry, where byproducts are not saved, are shown in Table I.

TABLE I. PRODUCTION OF CHARCOAL IN THE UNITED STATES (In Bushels)

Year	Charcoal Industry*	Wood Distillation Industry	Explosives Industry†	Totals
1899	27,000,000	17,150,000	†	44,150,000
1904	26,000,000	29,900,000	1,150,000	57,050,000
1909	14,300,000	39,950,000	750,000	55,000,000
1914	6,400,000	44,850,000	150,000	51,400,000
1919	3,450,000	48,500,000	†	51,950,000

* Calculated.

† Consumed in the industry.

‡ Not available.

Table II shows the output of the various products of the wood-distillation industry in 1899, 1909 and 1919.

TABLE II. PRODUCTS OF WOOD DISTILLATION INDUSTRY

	1899	1909	1919
*Wood alcohol, crude, gallons.....	4,946,000	6,773,000	6,981,000
*Wood alcohol, refined, gallons.....	3,038,000	6,733,000	6,985,000
Acetate of lime, pounds.....	86,826,000	141,478,000	152,064,000
Charcoal, bushels.....	17,154,000	39,952,000	48,499,000
Turpentine, gallons.....		707,000	1,521,000

*Produced for sale; does not include alcohol used in the industry.

IN THE STUDY of the ignition of coal-dust clouds in open air being conducted at the Experimental Mines of the U. S. Bureau of Mines, Bruceton, Pa., tests were recently made with pulverized Pittsburgh coal and with pulverized Colorado lignite. In some of these tests flame extended 45 ft. into clouds that were 50 ft. long, the lignite dust cloud making a larger flame than Pittsburgh coal dust. An attempt will be made to get a greater length of flame with an increased length of dust cloud.

WORK ON THE FLOAT-AND-SINK METHOD of cleaning coal, conducted at the Northwest experiment station of the Bureau of Mines, Seattle, Wash., has resulted in the development of an efficient large-sized machine for making these tests. This machine has been used in studying the washability of coal, in controlling the washing operation, and for measuring the efficiency of the individual coal-washing machines. In using this machine for future studies there is a possibility that it will be developed even to a more efficient point. This machine, however, does not give satisfactory results using fine sizes of coal. Work is being planned in which the limitations of the float-and-sink method on fine sizes will be determined. It is hoped that the float-and-sink machine can be adapted to washery control in the coal washeries of the State of Washington.

Liquid Oxygen in a Vaporizer Used for Resuscitation

Oxygen Is Kept in a Vacuum Bottle, the Heat Being Regulated Either by Electric Energy or the Application of Heat-Conducting Metal Surfaces—Gas Readily Brought to Breathable Temperature

BY HENRY BRIGGS*
Edinburgh, Scotland

BREATHING apparatus depending on a supply of liquid oxygen or liquid air are of two classes: First, the portable, self-contained mine-rescue apparatus, and, second, oxygen-administration appliances. The liquid-air mine-rescue equipment has been discussed in a previous article.† The latter class is undergoing a rather rapid process of evolution. It came into prominence as the result of the adoption by the German air forces, during the latter part of the war, of the Heylandt vaporizer to meet the need of the high-flying airman for more oxygen than light air will afford. This vaporizer, which is usually arranged to deliver to two men "in parallel," can supply air at any rate up to 12 liters per minute.

Fig. 1 is a section of the Heylandt vaporizer. It consists of a Dewar metal vacuum flask, *A*, of brass or steel, having in connection with the vacuous space a mass of "activated" charcoal, *C*. This, by occlusion or absorption of residual gas, maintains the necessary degree of vacuum. Liquid oxygen is poured into the flask through an opening, *B*, which normally is closed by a screw stopper fitted with a carrying handle. Evaporation of the liquid within the flask (stimulated at first by turning it upside down) maintains a pressure in the bottle of 12 or 15 lb. per square inch. A blow-off valve, *F*, prevents the pressure from rising above a predetermined figure. The success of the apparatus depends largely upon the proper functioning of this valve *F*. *G* is a pressure gage.

SUPERHEATERS DRAW WARMTH FROM FROSTY AIR

Under the influence of the pressure in the bottle, the liquid passes up the tube *D*, and drips into the external boiler *E*. This device is provided with a number of tubular, finger-like ajutages, *H*, which serve as heat-catchers. A second, auxiliary boiler, *K*, is usually provided in the German-built vaporizers, doubtless with the intention of catching and evaporating any liquid escaping from the first. The evaporated oxygen makes its way through long copper warming coils, *L* and *M*, to a regulating throttle, *R*, the adjustment of which controls the gaseous discharge. When this valve is nearly closed, pressure increases in the boiler and the discharge of liquid by the siphon tube is less rapid; when it is opened, the back pressure in the boiler is relieved and the liquid passes over more quickly; when the regulator is completely closed, the only gas discharging is that due to normal evaporation in the bottle—a flow usually amounting to about $\frac{1}{2}$ or $\frac{3}{4}$ liter of gas per minute.

The tube, or tubes, carrying the gas to the men is attached to the apparatus above the bag, *V*. The latter serves a dual purpose, acting, first, as an equalizer or

reservoir between the continuous delivery of the vaporizer and the intermittent inspirations of the lungs, and, second, as a gage, indicating by its degree of distension the sufficiency or deficiency of the supply.

The Heylandt vaporizer possesses certain obvious advantages: (1) It does not fractionate the oxygen-nitrogen mixture; that is to say, if the bottle contains a mixture of 80 per cent liquid oxygen and 20 per cent liquid nitrogen, the gaseous discharge from the apparatus has this same composition. I have called

attention to the advantage of using as pure oxygen as possible in any of these vaporizers, but the need for so doing is less urgent in this type than in any other. (2) This vaporizer admits of remote control. The regulating valve *R* may be placed on the apparatus, as shown, or at any distance from it. This is a great advantage in aircraft, whether the vaporizer be used to supply oxygen to the man's lungs or his engines. It also is of importance when these appliances are required to deliver oxygen for breathing through a hose-pipe, for if the regulator were attached to the "dress" worn by, say, a mine-rescue man, he would be enabled to adjust the rate of delivery of a vaporizer placed some distance outbye. The advantage in question, however, is not felt when the apparatus is used as a resuscitator or oxygen-reviver. This to the mining engineer is its most obvious application. (3) The flow from a Heylandt vaporizer can be regulated with ease and speed throughout a wide range.

With the vaporizers of this kind that I have had the opportunity of testing, the rate of flow did not remain constant when the regulator was left undisturbed for a period of, say, half an hour. This defect is of but slight importance where the appliance is continuously under observation, as in the case of an airman or of a mine-rescue man employing the vaporizer as a reviver, for then the discharge can be readjusted at any time. It is, however, a grave drawback for hospital use (e.g., in the treatment of pneumonia and other lung

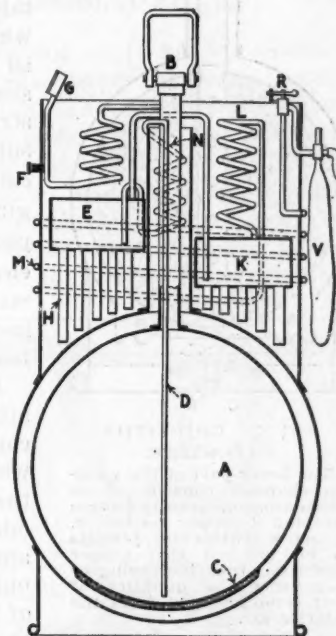


FIG. 1. HEYLANDT VAPORIZER
Regulation is secured by valve *R*. Excessive care is taken to "superheat" the air so that it will be warm enough to breathe. This probably is provided because the vaporizer is intended to be used in the cold regions of the upper atmosphere.

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†Article entitled "Liquid Air Boiling Away at Partially Regulated Speed Used to Supply Mine-Rescue Men and Rescued," by the same author; see *Coal Age*, April 6, Vol. 21, p. 609.

affections), where it is necessary to be able to leave a more or less helpless patient for hours at a time receiving oxygen from the apparatus.

The regulator handle, *R*, may move over a scale marked in liters per minute of flow; but, at its best, the scale can be correct for only one pressure within the flask. It is necessary, therefore, to have a direct-reading flow-meter (of the bobbin, deflection-vane or water-manometer type) on the delivery tube between the vaporizer and the breathing mask. The other forms of vaporizers here described also need this auxiliary fitting.

Sir James Dewar produced the first electric vaporizer. He introduced a resistance coil through the neck of the flask, the coil being immersed in the liquid. This form,

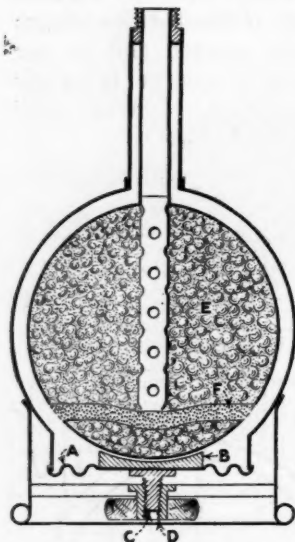


FIG. 2. GRIFFITHS VAPORIZER

The lower part of the vacuum chamber consists of an aneroid-barometer diaphragm carrying a copper conductor. A screw raises or permits to be lowered this copper conductor, thus increasing or decreasing the quantity of heat communicated from the exterior air.

again, admits of ready regulation and accurate control from a distance. Moreover, the resistance coil may be inserted into a "container" or storage flask, which may thus be converted into a vaporizer. Large-size vaporizers of this description may be useful in supplying oxygen to medical chambers or to the engines of aircraft. Their dependence on some form of electric supply, however, makes this type of vaporizer less serviceable for mining use.

Dewar was, I believe, also the first to devise a conduction vaporizer, in which the evaporation of the liquid was stimulated by admitting a controllable amount of heat from the outer atmosphere. A form of this device, depending on this principle which I de-

signed in 1918, but which was intended more for hospital administration than as a reviver for use in mines, consisted of a short-necked metal Dewar flask into the mouth of which could be pushed, first, a brass tube reaching to the bottom of the bottle, and second, a stout copper rod sliding inside the brass tube. The rod was furnished with a copper piston at its lower end, making a sliding fit within the brass tube.

SHEET-COPPER SPOKES CARRY HEAT TO LIQUID

A heat-catcher consisting of radiating sheet-copper spokes was attached to the upper end of the rod. When both rod and tube were drawn up, the evaporation of the liquid oxygen took place merely at the normal, unassisted rate for the flask (0.5 or 0.7 liter per minute). To increase this rate the brass tube was first pushed into the flask and afterward the copper rod also. Heat passed along the rod, through the piston and the brass tube, into the liquid, stimulating evaporation. The further down into the interior of the vaporizer the rod was thrust the more rapid would be the discharge of oxygen.

A number of these vaporizers were made and proved useful. They have the advantages of simplicity, low

cost and absence of parts under pressure. But they are rather top-heavy when the sliding parts are withdrawn, they do not give a sufficient range for a reviver that may have to be used in foul air, and the formation of frost upon the projecting portion of the rod is apt to cause it to stick. Although the flow of gas remains remarkably constant when this device is left to itself for hours at a time, the discharge does not immediately settle to its final value; it is always high when the rod is first inserted and does not become constant for ten minutes or thereabout.

ANEROID DIAPHRAGM REGULATES HEAT PASSAGE

To my mind the most promising attempt yet made at a conduction vaporizer is that of E. A. Griffiths. This apparatus is shown in Fig. 2. It consists of a Dewar vacuum bottle made of copper, provided in the base with a german-silver aneroid diaphragm, *A*. To the inner side of the diaphragm the thick copper disk, *B*, is attached, the outer side being fitted with a screw, *C*. A nut, *D*, which can be turned by hand, engages with this screw, and by rotating it the diaphragm can be flexed inward and the disk, *B*, brought against the inner bottle. More or less pressure can thus be exerted between the disk and the inner globe, and the heat-conductivity of the bridge across the vacuous space thereby altered.

This appliance is simple, compact, self-contained, readily understood by the non-scientific operator, and gives a uniform discharge over long periods. It was designed as set forth in the *Colliery Guardian*, April 1, 1921, p. 945, as the means of supplying oxygen to a mine-rescue apparatus, but probably it will find a wider field of utility as a reviver and in hospitals. As the figure shows, the inventor intends the liquid oxygen in the flask to be soaked up in dry asbestos wool, *E*, thus avoiding spillage of the liquid in case the bottle is upset. *F* is a tube containing charcoal.

All the vaporizers described, except that of Heylandt, fractionate in evaporation. When the liquid contains an appreciable amount of nitrogen the gas issuing from the vessel is considerably lower in oxygen than the liquid itself. This fact has no practical significance for revivers if the liquid contains more than 95 per cent of oxygen.

EASY TO HEAT AIR TO SAFE BREATHING TEMPERATURE

To judge from the complicated set of coils through which the oxygen issuing from a Heylandt vaporizer (Fig. 1) has to pass before it is admitted to the breathing mask, it may be thought difficult to raise the gas to a suitable temperature for inhalation. This is by no means true. Elaborate convolutions of copper tubing are unnecessary, especially for any vaporizer in which the stimulated evaporation is caused to take place within the flask itself, for in that case the gasified oxygen gains an appreciable quantity of heat in passing up the neck of the flask. As a result it issues from the neck at a temperature usually between -4 deg. and -30 deg. C. I find that with a conduction vaporizer the gas stream can be brought to a comfortable temperature merely by allowing it to pass through a 12-ft. piece of rubber tubing placed between the vaporizer and the breathing mask. Mr. Griffiths passes the oxygen through four narrow metal coils, encircling the neck of the flask, before letting it enter the flexible tube.

Protect Wood from Fire or Guard It from Getting in Condition to Burn Freely

BY GEORGE M. HUNT*
Madison, Wis.

BY CHEMICAL treatment wood can be made fire-resistant. Injected into its fibers, ammonium phosphate, ammonium sulphate or borax will make wood highly resistant to fire. Wood so treated cannot be ignited by a spark or other small source of heat. When continuously exposed to a high temperature for a long time it will char and fall to pieces, but it will not support combustion or spread flame until after the treated part has been destroyed. These chemicals have not found wide use in the treatment of wood largely because operators have not been willing for the sake of fire protection alone to undergo the expense involved. None of these chemicals is known to be a wood preservative and in the absence of test data their effect on the durability of wood against decay can only be conjectured.

Tests of the coating of timbers with cement as a means of rendering them fireproof have been made, for it is obvious that the fire hazard will be practically eliminated if the wood be afforded a sound, thick and permanent coating. The degree to which such coatings enable wood to resist decay remains to be determined. If they can be made dense enough and be kept sound enough permanently to exclude air from the wood, decay cannot, of course, proceed far. Cracks in the cement will admit air to the wood, however, and permit decay. Furthermore, it probably will be found difficult completely to cover the sides of timbers and lagging which are next to the walls and roof. If adequate tests demonstrate that cement coatings will prevent decay long enough to justify the expense and that maintenance charges are sufficiently low, this method may prove valuable.

ONCE DECAYED, TIMBER IS READY TO BURN

It is a well-known fact that decaying timber is easy to ignite unless it is wet. A match or a spark can start a blaze instantly in the rough, punky surface of a partly decayed stick. If the wood does not blaze at once, the fire may smolder and travel for hours until it reaches a favorable spot or until it is fanned by a draught into greater activity. On the other hand, the solid surface of a sound stick of wood, such as a mine timber, does not ignite so readily. This is especially true if the bark has been peeled off and a smooth surface has been left.

The surest way to keep timber sound and free from decay over a long period of time is to apply preservative treatment. There are several preservatives and several methods of applying them which are suitable for use on mine timbers. The variety is so large that no mine need be denied the advantage of preservative treatment of timber for lack of a preservative or a convenient method.

Coal-tar creosote and zinc chloride are the two preservatives most commonly used, and their effectiveness in preventing decay has been thoroughly demonstrated. Objection is sometimes made to coal-tar creosote on the ground that it makes wood more inflammable. There is little evidence, however, to support this claim, especially if the wood has been in use for a short time and the excess oil has evaporated from the surface. Cases are

on record of creosoted wood that appeared to have suffered less damage from fire than did untreated wood. Creosote has been used in several mines for years with excellent results.

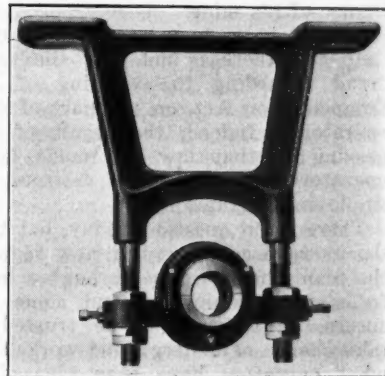
Objection cannot be taken to zinc chloride as constituting a fire hazard, nor can it be considered of itself to be a fire retardant, like ammonium phosphate or ammonium sulphate. If zinc chloride has any direct effect on the inflammability of wood, it probably is to decrease the danger. Through their effect on decay, however, as previously described, both creosote and zinc chloride indirectly reduce fire danger by keeping wood sound. It is not beyond the realm of possibility that a preservative or combination of preservatives can be devised which not only will preserve wood against decay but will also be an effective fire retardant. However, no such method seems available at present.

Shaft Hanger with Ball Bearings Designed To Lower Frictional Losses

THE improved ball-bearing shaft hanger shown in the accompanying illustration embodies several interesting details of design. Thus the principle of two-point suspension has been made use of. The bearing is carried in a split housing rigidly held by two threaded suspension rods. This makes a strong, compact unit—easy to assemble, align and inspect.

Any necessary horizontal or vertical adjustment can easily be made at the end of the housing by means of the locknuts and set-screws provided for that purpose. This eliminates the possibility of applying pressure that might be transmitted to the bearing proper while adjustments are being made. Self-alignment provided within the bearing itself allows the shaft to revolve freely and easily at all times and precludes the possibility of all rubbing, heating and binding.

When a shaft is provided with these hangers, which are manufactured under the supervision of the S. K. F. Industries, Inc., it may be assembled on the floor with the bearings in plain view, then raised into position for final adjustment with the upper half of the housing removed. This assures absolutely correct assembling. In most plants the freedom from trouble and the decreased friction obtained by the use of this hanger permit large savings to be made.



BALL-BEARING SHAFT HANGER
Provision is made for horizontal and vertical adjustment by means of locknuts and setscrews.

CONFERENCES HAVE RECENTLY BEEN HELD between representatives of the U. S. Bureau of Mines and the Navy Department concerning coal developments in the Bering River field of Alaska. The suitability of the coal for navy use and the possible application of the Trent process in treatment of the coal were discussed. Studies have been made regarding the application of this process to assist coal mines producing coal with much impurities in Oregon, Washington and Alaska.

*In charge, Section of Wood Preservation, U. S. Forest Products Laboratory, Madison, Wis.



Problems of Operating Men

Edited by
James T. Beard



Why Worry Over Change in Certificate Law

Change in the Old Certificate Law Made to Meet Conditions That No Longer Survive—The New Law a Dead Letter—Uncertified Men Not Wanted

MUCH has been said, by writers in *Coal Age*, regarding the certification of mine officials and interest in the subject shows no signs of abating. I have asked myself several times, "Why worry over this matter?" The results that were quite naturally feared when the old law was changed permitting the employment of uncertified men have not been realized.

As has been explained more than once, in *Coal Age*, the change in the law was made to satisfy the claims of certain operators, at the time when the Miners' Compensation Law went into effect in Pennsylvania. It was argued, then, that if the operator was made liable for the acts of his foreman he should have the privilege of choosing the kind of man who was to take charge of his mine.

Several years have passed since that time and there is not now the same dread regarding the working of the Compensation Act, on the part of coal operators. Indeed, the result of the passing of that law has made large operators all the more desirous of employing certified men.

There is no question, today, but that the average coal operator now regards the man who has gone through a mine foreman's examination and come out successful, is more to be trusted to take charge of underground work, than what operators have been pleased to term a "practical man," only.

NO CHANCE FOR UNCERTIFIED MEN

It is well known that a man who does not hold a certificate has very little chance, in competition with a certified man, when seeking a mine foreman's position at any of the large mines in this state. To such an extent is this true that, now, the young man who aspires to mine foremanship first prepares himself for the examination and secures a certificate before applying for the position.

No mine inspector would think of recommending a man without a certificate. Taking everything into consideration, one is forced to the conclusion that the new law is a dead letter, since the very men who might take advantage of its requirements are the ones who are ignoring it and studying to fit themselves to take the examination and obtain their papers.

Let me add a word, here, regarding the certification of the mine super-

intendent, which has been so often urged and which I believe no sane mining man will deny would benefit the superintendent and the operator who employs him.

It is my belief that operators' eyes have been opened to this fact. I well remember the time when a mine foreman's chance of promotion to a superintendency was about one in a hundred. Now, all that is changed, and the successful mine foreman is in line for a superintendent's position for which he is well fitted by experience and knowledge.

LIFE OF THE CERTIFICATE

Regarding the length of time a certificate should hold good, I must differ with the suggestion that they should be renewed every four years. I may be wrong, but feel that the man who has studied for his certificate, and is any sort of a man, will not lose his interest when the paper is handed him, but will keep his knowledge up to date.

Any mine foreman who is worth while is brought into daily contact with different phases of the subject he has been studying; and he will not be satisfied until he has tested the knowledge gained, by applying the principles taught him to the solution of the many problems that arise in the mine.

He can never be the same man again, but continually sees things in a new light. The nature of the coal and rock strata interests him; the very air he breathes seems different from what it was before; and he studies the ventilation of the mine from a new viewpoint.

With this picture of a certified man before us, let me ask, What benefit would arise from an examination every four years? When a doctor, a druggist, dentist or lawyer receives his diploma he hangs it up in the full assurance that he will not be asked to pass the same examination again. Should not the same apply to our mine foremen and superintendents?

Indiana, Pa. THOMAS HOGARTH.

ANOTHER LETTER

WITH keen interest and real pleasure, I have followed the discussion regarding the effect of the amendment to the certificate law, in Pennsylvania. Most of the writers have shown their progressiveness by lining up in favor of the certification of mine officials.

While rejoicing in this fact, I have deep respect for the honest convictions of those who are otherwise minded.

One correspondent, however, appears to overstep the bounds of credulity in an effort to support his claim and displays, to my mind, much inconsistency. I refer to the letter of R. W. Lightburn, *Coal Age*, Feb. 16, p. 291.

AMENDMENT, NO ADVANTAGE

Mr. Lightburn says he does not wish "to attempt to destroy any advantage that has been gained through the amendment to the certificate law, in Pennsylvania." It is hard to believe that this is a serious remark, as few consider that there has been any "advantage" resulting from the amendment to the law. On the contrary, disadvantage must be evident to every right thinking person.

Seriously, who will deny but that the 1915 amendment leaves a loophole for the employment of incompetent men, by reason of some affiliation in lodge, church or political associations.

Again Mr. Lightburn says, "The successful mine foreman is the man who combines with his practical experience a knowledge of the principles of mining." I would ask, How is this consistent with his previous remark that, "The holding of a certificate does not make a man any more proficient than he was before he obtained the paper."

No one will deny that the possession of a certificate is evidence that the holder has gained a knowledge of the principles of mining that will make him a successful foreman if combined with good common sense and practical experience in the mine.

SERVICE CERTIFICATE SHOULD END WITH SERVICE IN COMPANY

Further reference might be made to this phase of the subject, but it would seem to be needless in view of the fact that the certified man is everywhere in demand today. In passing, let me say that it is rather unfortunate that no time limit has been put on the "service certificate." It would seem to have been well if service under such certificate had been limited to the time the holder was employed in the same company.

Before closing, I want to say a word about the "vest-pocket certificate," mentioned by Mr. Lightburn. That gentleman's information regarding the certificate must have been obtained from an old Englishman whose experience antedated the Coal Mines Regulation Act of 1887, which provided for the compulsory certification of managers and undermanagers of mines. The so-called "vest-pocket certificate" was a

permit given by the mine manager (foreman) to a shotfirer, authorizing him to fire shots in that mine.

EFFORTS TO EDUCATE MEN IN GREAT BRITAIN

The certification law in the United Kingdom was extended, in 1912, to include firebosses, who have since been required to submit to a rigid eye test. In addition to requiring certification under the British Mine Law, the Government has established a wonderful system of technical night schools where students within a radius of three or four miles can be taught, the expense of transportation being met by the county, at the close of each session. The cost of tuition is practically nil.

In this respect, I am speaking from personal experience, having spent two happy years attending such a technical night school, after which I have worked for fourteen years, under the British Mine Law.

Before taking the first-class or manager's examination, the candidate must have studied the organized course, for a period of four years, at one of these technical night schools. Two years are required to take the second-class or undermanagers's examination.

In view of these statements, perhaps Mr. Lightburn will be willing to admit that England has been a pioneer in the making of certification laws and, in addition has provided the means for instruction to enable their miners to qualify themselves for official positions in the mines. JOHN WALLS, SR.

Bayview, Ala.

Number of Cars Needed To Operate a Mine

Estimating the output of coal from the number of miners employed—Conditions with respect to haulage determine the number of cars required.

REFERRING to an Examination Question that appeared in *Coal Age*, Feb. 23, p. 335, asking for the number of cars required to operate a mine employing 250 diggers and using electric haulage, allow me to suggest that the estimate of $2\frac{1}{2}$ tons, per man, per day, is low.

In this locality, each digger will load an average of eight or nine tons a day. Now, while this may be too high for a general average, it would seem to me that an estimate should be based on an output of, say six tons, per man, per day, which would make the total output of this mine $6 \times 250 = 1,500$ tons of coal.

It is a very hard matter to figure out just the number of cars that will be necessary to operate a mine to the best advantage, as there are many things that will affect the problem. Working double, two men loading a car, will require 125 cars standing in the rooms; or, working singly, 250 cars would be required in the rooms. Again, if what is known as the "split turn" is used, but half this number of cars will be required in each case.

Assuming each miner has a full turn, however, the driver setting in an empty, for each load pulled out, and the men working double, we will say there are 125 cars loading and, perhaps, with three motors hauling eight-car trips, each, there will be 24 cars in transit and as many more standing on the tipples making, say 175 cars in use, assuming the motors haul from the face to the tipples. If mules are used for gathering the cars, there will be required from 25 to 30 more cars standing on sidetracks.

In the answer to this question, an electric locomotive is assumed to make 12 trips a day, hauling twenty-six 2-ton cars in a trip. Allowance is made for one trip loading on the inside parting in the mine; another trip in transit; and a third trip being unloaded at the tipples. A further allowance of 25 cars loaded with timber and other supplies and nearly the same number in the repair shop or idle in the mine, making about 125 cars in all.

In my opinion, all timber and other supplies should be handled at night, making this allowance unnecessary.

Central City, Ky. OSTEL BULLOCK.

Two Kinds of Mine Foremen

Co-operation of men and bosses essential to success—Men respect a boss who knows what he wants and is firm—Two foremen who tricked their employers in seeking promotion.

IT WAS with much satisfaction that I read the excellent letter of George Edwards, *Coal Age*, Jan. 12, p. 52, in which he brought out several important items in reference to coal mining and the success of mine officials.

In his letter, Mr. Edwards emphasizes the need of co-operation between the mine officials and the men they employ. He describes the successful boss as one who is a leader among his men. We all know that one man can accomplish little acting alone, while co-operation is sure to bring results and its need is essential to success.

My experience is that a boss who has the ill will of his men may as well seek another location, for failure will surely be his doom, sooner or later. A foreman finding himself in that position would do well to make a close study of his men with a view to ascertain how to manage them successfully and get results in the mine.

MEN RESPECT THE FOREMAN WHO KNOWS WHAT HE WANTS

Let me say, here, that a foreman must show his men that he is boss, while at the same time treating them right and holding their good will. The foreman who allows his men to have their own way does not gain their respect. When his back is turned they will pass remarks that are not to his credit and the laugh will go around.

On the other hand, the foreman who knows what he wants and is kind but firm in his requirements is respected and obeyed. I believe a foreman should be very slow in forming his conclusions.

He should make sure that he is right before starting something and then stand firm in his decision.

TRICKING THE COMPANY

In my experience, it has happened twice to know of mine foremen who gained promotion to superintendencies, by tricking their companies. In each case, the foreman was able to reduce the expense of operation very largely, in a short time after taking charge of the mine.

This was accomplished by the said foreman getting rid of a number of day-men and shiftheads who he claimed were unnecessary to be kept on the payroll. Every item of expense that could be eliminated, whether for labor or supplies, was cut out.

The result was a rapid reduction in the cost-sheet, while extraordinary efforts were made to maintain the daily tonnage. It may well be imagined that little timbering and other deadwork was done in that mine, for a time. The result, of course, pleased the management and it was not long before each foreman was offered the superintendency of his mine.

UNFAIR TO THE MAN WHO FOLLOWS

The story is not told, however, until we learn the final outcome of this procedure. The incoming mine foreman, in each instance, faced a hard proposition when he attempted to maintain the gradually decreasing tonnage and keep down the expense. Naturally, the management thought the new foreman was a far less capable man than the one previously in charge.

On the other hand, the superintendent was in a position to give added support to this conclusion, though he well knew the injustice that was being done the new man. In closing, allow me to say that I like to see a foreman work, first, in the interest of his company and, then, consider the cost. If that don't get him a promotion let him stay a foreman.

JAMES THOMPSON,
Mayport, Pa. Mine Foreman.

Miners Must Co-operate

Economy needed in operation of mines—Wasteful practices to cease—Decreased profits call for decreased wages—Duty of every employee to co-operate willingly.

NUMEROUS references have been made, recently, in *Coal Age*, in regard to the need of greater economy in the mining of coal and calling for co-operation on the part of employees, in the efforts of operators to place their mines on a paying basis.

So great has been the expansion of every business, during the war, that few now realize the real meaning of the present condition, which calls for the exercise of great economy. In no industry is this fact more true than in that of coal mining.

During the past year, however, some operators have awoke to the necessity of making greater efforts to put their mines on a paying basis. They recog-

nize that, in order to mine coal at a profit, the strictest economy must be used in every branch of the work.

To all thinking men it is clearly apparent that reduction in wages is now inevitable. There can be no return to normal conditions, unless miners and operators alike are willing to accept the losses that come to all through the downward trend of commodities, in general.

LOSS OF PROFITS TO OPERATORS MEANS LOSS OF WAGES TO MINERS

These losses manifest themselves through the decreased profits of operators and the decreased wages of miners and other employees. The extent of these decreases, in each individual mine, will depend directly on the economy shown in its operation.

It is recognized by all that waste has been allowed to go on unchecked during the past few years when everybody was making money and wasteful practices grew more frequent. Now, things have changed and we are brought face to face with a different condition. The downward trend of the market, owing to a lesser demand and an over production of coal, has made it difficult to operate our mines at a profit.

It should be plain to all that a concern that is making money will do everything possible to operate their mines regularly and give steady work to their employees. Again, a concern that is breaking even will care less whether they operate regularly or not, while one that is losing money will soon cease to operate.

STEADY WORK AT A FAIR WAGE

Certainly, a man would rather work for a concern that is making money and can give him steady work, at a fair daily wage. That being the case, it is the duty of every employee, working in or about a mine to co-operate in every possible way with the management in their efforts to reduce operating expenses and put the mine on a paying basis.

All wasteful practices must cease and every shoulder must bend under the burden. There are many ways in which saving can be effected and the man who will stop to think will find many things to do to stop wasteful practices and make it possible to operate the mine more economically. F. C. SINBACK.

Oak Grove, Ala.

Machine Mining vs. Solid Shooting

Cutting coal with machines gives better grade of lump—Shooting off the solid gives cheaper tonnage—High wage scale and low price of coal require concentration of work.

AFTER reading the many letters of different writers, in *Coal Age*, I have been impressed with the thought that no one man knows it all. There have been a number of good points brought out in the discussions relating to the different ways of mining coal.

An experience of fifteen years in the

Western Kentucky coal fields has convinced me that machine operations produce a better grade of lump coal, while solid shooting affords cheaper tonnage; assuming, of course, that a mine is properly equipped for hoisting the coal mined.

The present crisis is a time when coal operators must consider ways and means of lowering the cost of production in every way possible. With the present scale of wages and the low price of coal, many operators are finding it hard sailing. In most instances, the mine equipment was designed when wages were \$1.75 a day, which is no match for the present wage scale of three times that amount and more.

CHEAPER TONNAGE THE ONLY HOPE

I have said that shooting coal off the solid affords cheaper tonnage. One reason for this is that it eliminates the employment of many daymen, which every one will agree is an important consideration, at the present stage of the coal industry.

To my mind, the only hope for a coal operation that is not properly equipped to meet the present needs, is to rearrange the machinery. It has become, now, absolutely necessary to provide an equipment that will enable one man to do the work previously performed by three men, and do it with greater ease.

That is the problem of today, let no one mistake the fact. To earn the wages of three men, a man must do three times the work and he must be given the means to accomplish this. There are numerous ways in which work in the mine can be concentrated.

ECONOMY OF MINE LABOR

Today, I never give a switchlayer a helper, nor put three men on a job that requires but two live men to perform. Of course, we must remember that two men working together can hardly accomplish double the work of a man single handed, except perhaps in a few isolated cases.

What appeals to me as a practical solution of the present problem is to place all daymen, including the mine foreman, on a tonnage basis. This plan would guarantee the operator 100 per cent work, for 100 per cent pay. It is my belief that the results would be surprising.

If such a plan was to be adopted there would be no laying down on the job. Every man would be up and doing, from the foreman to the last man on the payroll. Any laggard found delaying the output of coal would be hounded by all, until he left the place. The plan would tend to give everybody pep.

MINE FOREMAN.

Madisonville, Ky.

Inquiries Of General Interest

Renewing Worn Tires on Mine Locomotives

Tire Expanded by Heating Readily Removed—
Likewise New Tires Must First Be Expanded
by Heat and Then Shrunk onto the Wheel

DESIRING to rig up some sort of an arrangement for removing worn-out tires from the wheels of mine locomotives, it has occurred to me that mention was made some time ago, in *Coal Age*, regarding such an arrangement. Can you give me any information on this point, or explain how the old tires of a locomotive can best be removed when it is necessary to replace them with new ones?

Holsopple, Pa. MINE MECHANIC.

The method of removing old worn-out tires from locomotive wheels, we remember, was explained some years ago in *Coal Age*. No apparatus is required for that purpose, however, the means employed being a simple fire built on the ground surrounding the wheel, which must first be mounted in a horizontal position and in a manner that will permit the expanded tire to be knocked off from the rim of the wheel, if it does not drop off when heated by the fire.

In arranging the fire about the wheel, care must be taken to place it close

enough to heat the tire strongly, but not to expose the wheel itself to the heat of the fire more than is necessary. The idea is to keep the body of the wheel cool while quickly heating the tire and causing its rapid expansion. A few blows with a hammer will generally be required to loosen the tire and cause it to drop from the wheel.

The suggestion was once made, by a correspondent in *Coal Age*, that a worn-out tire could generally be removed quickly, by splitting it with a sledge and heavy cold chisel. Preference of these two means of removing a worn tire is largely a matter of choice. The new tire is put in place on the wheel by the same means as that just described for removing the old one.

Keeping the wheel as cool as possible and laying it flat on the ground, the new tire is first expanded by a slow heat that will produce a uniform expansion. At the proper time, the heated tire is raised from the fire and brought over the rim of the wheel. It is then driven in place and allowed to cool, or is shrunk onto the wheel.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

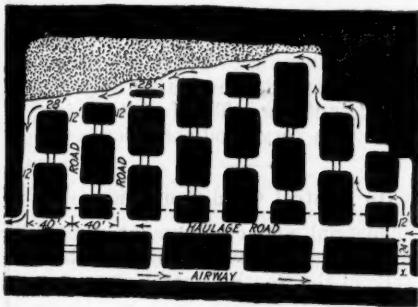
QUESTION—What is the probable discharge of a duplex, double-acting mine pump whose plungers are 10 in. in diameter and stroke 24 in., the pump making 40 revolutions per minute?

ANSWER—For a stroke of 2 ft. and a speed of 40 r.p.m., the piston speed is $2 \times 2 \times 40 = 160$ ft. per min., there being two strokes at each revolution, which makes the piston displacement of this pump $12 \times 160 (0.7854 \times 10^2) \div 231 = 652.8$ gal. per min.

Finally, the pump being duplex and assuming an efficiency of 85 per cent in the water-end, gives $0.85 \times 2 \times 652.8 = 1,109.76$ gal. per min.

QUESTION—Explain and show by sketch how you would mine a thick seam of soft coal, overlaid with a soft top and lying at a depth of 300 ft. below the surface.

ANSWER—Because of the frail top, this seam should be worked on the pillar-and-stall system. As shown in the accompanying figure, 12-ft. stalls should be driven to the rise of the haulage road, on 40-ft. centers, leaving 28-



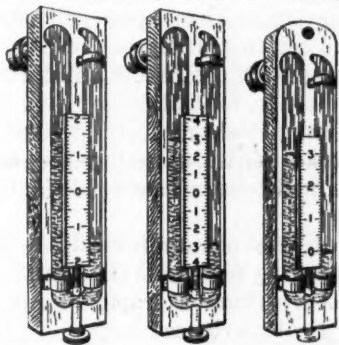
ft. pillars between the stalls. The stalls should be driven up to the limit, say 50 or 60 yd., and the wide pillars worked out on the retreating system, care being taken to keep the pillarwork in line and to leave no timbers standing.

QUESTION—Show three forms of graduation of water-gage scales, explaining each.

ANSWER—In the accompanying figure are shown three forms of graduating the scale of a water gage. The scale on the right is divided into inches and reads upward, the zero being at the bottom of the scale, which must be adjusted to the lower water level and the reading of the upper water level will then be the gage reading required. This scale must be set after the gage is in position.

Each of the other scales is graduated, from zero at the center, to read both up and down. These scales must each be set so that the zero of the scale

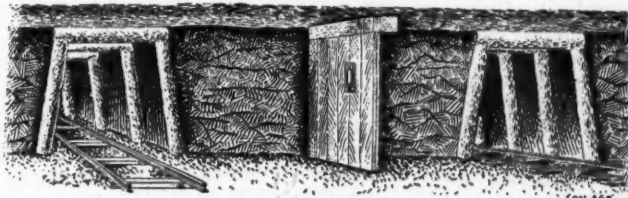
corresponds to the water level in either arm of the gage, before it is placed in position and subjected to the difference of pressure between the intake and return airways in a mine. It will be observed, however, that the scale on the extreme left is graduated in full inches, while the one in the center is graduated in half-inches. When reading the former, therefore, it is necessary to



take the sum of the two readings at the lower and upper water levels, respectively; or to double either of these readings, provided the scale has been properly set at the start. On the other hand, the reading of the center scale is correct taken either at the upper or the lower level. The reading of each of the three scales shown is 3 in.

QUESTION—Explain how a water-gage reading of 1 in. indicates a pressure of 5.2 lb. per sq.ft., as the difference in pressure between the intake and return airways, where the water-gage reading is taken in a mine.

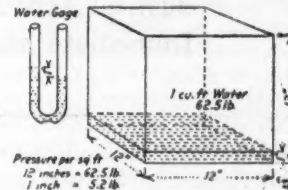
ANSWER—In Fig. 1 is shown a brattice dividing an intake and return airway in a mine. The water gage is shown in position on this brattice. One arm of the gage being bent at right angles and inserted in a hole in the brattice, the water in that arm is exposed to the pressure on the return side



of the brattice, while the water in the other arm is exposed to the intake pressure on this side of the brattice. In this position, the reading of the gage gives the difference of pressure between the two airways.

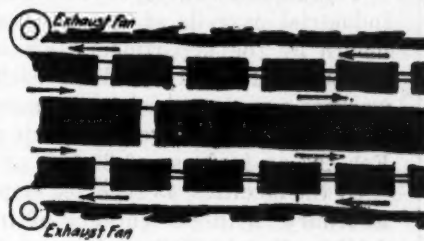
In Fig. 2 is shown a cube, 12 in. on each edge, corresponding to a cubic foot

of water, which weighs 62.5 lb. It is evident that an inch in depth of this water will have a weight $62.5 \div 12 = 5.2$ lb. This weight of water, being distributed over a square foot of area, corresponds to a pressure of 5.2 lb. per sq.ft. due to 1 in. of water level. It



must be remembered that the size of the container holding the water makes no difference in the pressure per unit area, which depends only on the depth of the water. Therefore, each inch of water-gage reading corresponds to a pressure of 5.2 lb. per sq.ft.

QUESTION—Assume a gaseous mine is opened on the four-entry system, the main headings being driven four abreast and the butt headings driven to the right and left of these entries. Again, assume, as shown in the accompanying figure, that this mine is ventilated by two exhaust fans, which act independently to ventilate the two sides of the mine, respectively. Now, suppose one of these fans breaks down and it is possible to ventilate both sides of the mine with the remaining fan, through an overcast connecting the two return airways, what volume of air will result, if each fan working inde-



pendently before the breakdown produced a circulation of 100,000 cu.ft. of air per minute, making the total circulation produced by the two fans when working independently 200,000 cu.ft. per min.?

ANSWER—Assuming an equal power driving each fan and equal efficiencies, the power on the air when a single fan is working is but one-half of that when both fans are in operation. Disregarding the slight increase of mine resistance, due to the

total circulation reaching the single fan or because of the union of the two splits at a point near the fan, it may be assumed that the mine potential remains unchanged; and the quantity of air in circulation will then vary as the cube root of the power on the air; or

$\sqrt[3]{0.5} = 0.7935$. On this basis, the total volume of air, circulating in two splits as before but under the action of a single fan, will be $0.7935 \times 200,000 = 158,700$ cu.ft. per min.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

INDUSTRY took up considerable slack in March, showing an improvement of 2.5 per cent over February and 7 per cent over July 1921, which was the low water mark in employment, according to the U. S. Department of Labor survey for the month ending March 31, 1922.

"Business will not come back with a jump," the department's announcement states, "but every indication points to a general progressive upward movement. The coal situation may check improvement in certain lines of industry, interrupting a steady healthy swing heading to normal condition. However, there is a general pronounced optimistic feeling that warrants the statement that April will show increased activity, other than in coal and cotton textiles.

"Employment increased in all industries with the exception of food and kindred products, textiles and their products, and leather and its finished products. The basic industries iron, steel and metal products; vehicles for land transportation; railroad repair shops; paper and printing; stone, clay and glass products, and tobacco made substantial gains.

"Reports from 231 of the principal industrial centers indicate an active building program of which the encouraging feature is the increased number of residential constructions. Agriculture is rapidly coming back, and there is an increased demand for experienced help.

This monthly survey is based on actual figures taken from the larger industrial payrolls of the country. The statistics are gathered each month by the department's special agents in 65 principal industrial centers. In all, 1,428 firms each usually employing more than 500 workers are comprised in the survey. On March 31 these 1,428 firms had 1,604,959 employees on their payrolls, compared with 1,565,401 on Feb. 28, an increase of 39,558, or 2.5 per cent.

Of the 65 cities, 43 reported employment increases during March over February, with percentages of increase varying from 0.95 in Philadelphia, Pa., to 28.2 in Denver, Col. Twenty-two cities reported employment decreases during March over February, the percentages of decrease being from 0.09 in Louisville, Ky., to 17.2 in Paterson, N. J.

Mid-Atlantic Revival Under Way

A gradual and steady industrial advance during the past two months, together with current reports of increased activity in basic industries throughout the Middle Atlantic district strengthen the conviction that a revival in the general situation is under way. While general conditions are still somewhat irregular, the main trend of business has shown a gradual improvement, supported by prospects of further gains; added reason for a more hopeful feeling appears in a continued increase in operations of the iron and steel industries, diminishing unemployment of skilled and unskilled labor, and expansion of building operations. Reports from many sections of the district show the anticipated building boom is under

way, which is further evidenced by increased activity in structural mills and fabricating plants.

INDUSTRIES REPORTING AN INCREASE IN EMPLOYMENT IN MARCH, 1922

Industries	Amt. of Inc.	P.c. Inc.	Weight*
Vehicles for land transportation.....	15,245	8.4	12.3
Iron, steel and their products.....	17,930	5.3	22.3
Metal and metal products.....	4,084	4.9	5.4
Miscellaneous.....	10,746	4.2	16.7
Stone, clay and glass.....	264	1.8	0.94
Lumber and its manufacture.....	382	1.6	1.5
Railroad repair shops.....	933	1.5	3.9
Tobacco manufacture.....	441	1.4	1.9
Liquor and beverages.....	4	0.46	0.05
Paper and printing.....	175	0.34	3.1
Total.....	50,204		

INDUSTRIES REPORTING A DECREASE IN EMPLOYMENT IN MARCH, 1922

Industries	Amt. of Dec.	P.c. Dec.	Weight*
Leather and its finished products.....	2,668	4.6	3.4
Textiles and their products.....	5,511	2.2	15.4
Chemicals and allied products.....	931	1.2	4.6
Food and kindred products.....	1,536	1.2	8.2
Total.....	10,646		

*Per cent employed March 31 to total reported employed in 14 groups.

New England Optimistic

Except in the textile industry, which is uncertain on account of industrial disputes, a general feeling of optimism is sensed throughout the New England States. Unemployment is heaviest in metals, machinery and building trades. Woolens and worsteds have curtailed production during the past few weeks. The shoe trade has experienced the usual seasonal spurt due to Easter orders. Retail sales for the past month showed a slight increase over the receipts of February. Building reports for the six New England States give value of contracts awarded as \$15,623,400. Of this amount \$4,463,100 was for residential buildings.

Fewer Idle in South Atlantic Region

Reports from 30 cities in this the South Atlantic district continue to show steady gain in employment with the outlook for more rapid improvement within the next 30 days.

Midwest Manufacturing Gaining

Steadily increasing output of iron and steel and higher prices of farm products have been the most encouraging factors in the business situation within the last thirty days. Until these lines are well under way again, business can only mark time. Unemployment will only give way by small percentages. The manufacture of machinery is receiving stimulation from the large orders recently placed by the railroads, from the automobile industry, from recent quickening of activity in farm implements and prospective activity in road building. The furniture industry is in very good condition.

South Central Conditions Improve

Industrial and employment conditions are improving slowly but surely in the South Central districts. Actual payroll data received from 556 industrial concerns representing most all of the 14 groups of industries employing 84,598 show a net increase for the month of 273. Seventy per cent of the textile mills are running full time, 25 per cent part time and 5 per cent shut down. Fifty per cent of the lumber mills are running full time, 35 per cent part time or with reduced forces and 15 per cent shut down. Building is showing a decided increase in volume. All classes of building material are in fair demand. Manufacture of cotton, silk and wool textiles has dropped off in recent weeks. In the tobacco growing regions conditions have changed considerably for the better over last year and in the cotton-growing states the sharp recovery of cotton prices has aided that section materially.

Hoover Enunciates to Trade Association Officials Unalterable Opposition to Open Price Reports

TRADE association secretaries, executives and members gathered in Washington on April 12 to discuss with Secretary Hoover and the officials of the Department of Commerce how to save the trade association. Ever since the Supreme Court handed down its decision in the *Hardwood Lumber* case a slow disintegration of such associations has been discernable. The Department of Commerce has taken an active and helpful interest in the association movement and some time ago obtained from the Attorney General an expression of what in his judgment the proper activities of trade associations are. The correspondence between Mr. Hoover and Mr. Daugherty (*Coal Age*, Feb. 16, pp. 297-300) cleared up some of the problems of the secretaries, but there were so many left that the meeting of last week was called to have Mr. Hoover throw more light on the troublesome subject.

After all, it appears, the chief trouble is and has been that the question of "open price" reports is of most interest to present-day associations. In other words, the secretaries have found no very great difficulty in keeping the other aspects of their work going, but without the open price reports many have come to the conclusion that they cannot hold their organization in line. The open price report has come to be considered as the feature of greatest immediate value to members—something that they can use and get their money's worth on short notice.

This the Secretary will not support with the facilities of the Department of Commerce, as was made clear by Mr. Hoover in his opening address and a number of times later in the course of the conference. His letter to Mr. Untermeyer, elsewhere in this issue, is plain on this point. There was no open opposition from the floor to this position, but some disappointment was expressed in the corridors.

ATTENDANCE TOO LARGE FOR COMMERCE BUILDING

The conference was held in two sessions, both in the auditorium of the Interior Building, after it was found that the attendance was too large to be accommodated in the largest room in the Commerce Building. The addresses from the floor were largely laudatory of the association movement, of Mr. Hoover, and of the work that is being done by the Department of Commerce to aid business and rebuild the trade association. Representatives of the U. S. Chamber of Commerce, the National Association of Manufacturers, the Automobile Chamber of Commerce and many national associations were speakers. A paper read by E. J. Cornish, representing the National Paint, Oil & Varnish Associations, Inc., was hailed by the audience as so expressive of the feelings of those present that it is reprinted herewith in full.

Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce, and Mr. Durgan, of the Division of Simplified Practice, expressed a willingness on the part of their bureaus to work with the legitimate trade associations. Dr. Stewart, of the Census, said that it was a tremendous job to gather and publish promptly statistics of all the country's industries.

Chairman Gaskill of the Federal Trade Commission suggested that the trade associations give closer attention to the competitive system under which society was organized, a system whose purpose was to give the greatest measure of social justice to all. Monopoly was destructive to competition, and all things tending toward monopoly must be weeded out. It was not a question of too much government in business or vice versa, but of the closer co-operation of both, to mutual advantage.

Secretary Hoover called upon Senator Edge, who said that he felt business should know where it is at, and to that end had introduced a bill designed to aid the trade associations in defining their activities. Co-operative help from Congress is as necessary to business as it is to agriculture, he declared.

The solicitor of the Department of Commerce emphasized

the voluntary nature of the support from trade associations, and that the department had no means of compelling or desire to compel them to give their aid or conform to certain regulations. Secretary Hoover in his closing remarks said that the conference was merely a meeting for information and education and was not sufficiently organized to go into details. He was ready to meet each association with its individual problems and to go into details with it. He stated that only about one-third of the associations compiled trade statistics and that the Department of Commerce has never attempted to impose a statistical service upon the associations. The voluntary statistical contributions of trade associations were gladly received and used. Mr. Cornish's address follows:

"In the great mobilization of industry during the war, many manufacturers found themselves, in company with their competitors, arguing that theirs was an essential industry—properly entitled to coal and transportation. They also found themselves submitting cost sheets on forms approved by government officers, and reporting location and capacity of their plants, annual output, stock on hand, sales and prices. There was no preconceived plan to form a trade association—it simply took form and became. Everyone's secrets—if anyone had any secrets—were, of necessity communicated to his competitor—the only one from whom he desired to conceal them. Everyone was surprised to learn that his competitor was not a liar or a crook (as he had frequently been represented to be by salesmen) but, on the contrary, was a gentleman imbued with the same ideals of business ethics as himself, and very companionable by reason of their mutuality of interests. What was more interesting and surprising was that they found that the disclosures of their innermost secrets did not prove to be damaging, or rather they found that secrets of real value were already known to their competitors.

SUMMARIZES ADVANTAGES OF TRADE ASSOCIATIONS

"At the close of the war the associations were naturally continued because they had proved injurious to none, advantageous to all. The advantages of the association are:

"(1) It enables each one to know the basic facts of his own and kindred industries, so that in forming his own business policies he may act intelligently and safely.

"(2) It raises the standard of trade ethics. No man ever does that of which he is ashamed if he knows that in the near future he will meet a gentleman whose good opinion he desires, who will know of the shameful act.

"(3) It gives stability to business. As Judge Carpenter expressed it, 'It enables one to sleep of nights.' This not as the result of an agreement or understanding, but because—where all of the important facts are known—reasonable men are not likely to draw therefrom radically different conclusions as to what their business policy should be.

"(4) It permits those countless economies and advantages possible to voluntary co-operation where each one retains complete freedom of action. Among these are research and educational work, gathering of trade statistics and information, co-operative trade promotion and advertising, standardization of products and containers, co-operative insurance, reformation of trade practices, transportation and classification charges, protection of industry from the evils of adulteration, deceptive advertising and other frauds, etc.

"It has been generally understood that such associations are not illegal if there is no agreement or understanding fixing prices, limiting output or dividing territory, and that the information given as to prices and stocks was statistical, referring to past and present facts that could not then be changed.

"The criticism of these associations has been that they resulted in higher prices, tending to increase the cost of living, and that the good features of the associations were

mere camouflage to hide illegal combinations in restraint of trade.

"Of course, in so far as the associations brought competitors into each other's presence, they created an opportunity to make illegal agreements or understandings. The same would be true of a convention or dinner or any other occasion where competitors meet. Probably the number of illegal combinations has been greatly exaggerated. Such illegal agreements are not at all necessary to the usefulness of the associations. The fact that most of them invited attention and criticism by sending minutes of their meetings to the Federal Trade Commission indicates a belief on their part in their own innocence.

"There is absolutely no evidence that prices have been unduly increased by these trade associations. There are no companies, members of such associations, whose published statements indicate that they have been making undue profits. Many associations ceased to function in the spring of 1920, when their legality was questioned by the Attorney General. Prices of manufactured articles have not declined since then to any greater extent than can be adequately accounted for by the decline in the costs of doing business. High compensation to laborers, office force, salesmen and managers; high rents; increased freight rates; high and uncertain taxes—these facts account for high prices and high cost of living, without attributing crime to any one. The belief that trade associations are simply price-fixing associations in disguise is so prevalent, however, that suggestions are multiplying as to the means of preserving the advantages of such associations without the possibility of any of them degenerating into illegal combinations in restraint of trade.

DISCUSSES PROPOSED PROTECTIVE MEASURES

"Three remedies have been proposed: First, the repeal of the Sherman law. Without doubt, the Sherman law has removed two of the most frequent inducements to price cutting. Under free conditions, competitors do not cut prices just to be competing; they do so because they believe it to be advantageous. One frequent inducement to price cutting is to reduce the profits in the industry to such an extent that a competitor's properties can be bought at less than their value. Another inducement to price cutting is to demoralize business to such an extent that competitors will buy out the price cutter—not at the proper value, but at the 'nuisance value' of his properties. The Sherman law effectively removes these two inducements to price-cutting. In like manner, everyone desires that inasmuch as he himself cannot buy the properties of a competitor, anyone who does so shall pay the highest price obtainable therefor, so as not to have a new competitor embark in the business at a reduced capital investment. The Sherman law, therefore, furnishes an inducement to the stronger competitor not to reduce prices to a point that would cause the lesser competitor to fail.

"Of course, such reasoning is shallow and shortsighted. Sherman law or no Sherman law, sooner or later every company will learn by experience that, to give permanency to its profits, its prices must be so low that new capital will be deterred from embarking in the business—even though the aggregate of the small profit, per unit, makes the total profit of the large established business satisfactory. Inasmuch as the public believes the Sherman law advantageous, and both large and small companies look upon it as a protection, and the farmers and laborers have been exempted from its operation, no one actively seeks its repeal, except students of political economy, who have only a general interest in it. Its repeal, therefore, is not likely to be seriously considered, notwithstanding the very able arguments appearing in the press.

"Another proposed remedy is to empower the Federal Trade Commission to license and regulate all trade associations and prescribe definitely and clearly what such associations may or may not do, and prevent the functioning of all associations not so licensed. This plan has been highly commended by many, and may prove to be the least objectionable solution of the trouble. The criticisms of it are that it is essentially communistic. It is another form

of state control, and state interference with business freedom. The commission might come under the influence of the people to be regulated or might become tyrannical and demagogic, and influenced by political considerations. It is impossible to state at this early date what the reaction of the public to this plan will be. Diminishing profits and the tendency of states to find ways to tax and impose restrictions and espionage on corporations engaged in interstate commerce are inclining many business men to favor federal incorporation or federal licenses to do interstate business. While such centralization of power in any governmental body is theoretically objectionable, it might be much more satisfactory than to be subjected to the interference of several federal departments and of many states.

"The last proposed remedy is to permit trade associations to gather the information desired, so that the members may have comprehensive, authentic and timely information as to the basic facts of their business—subject to the restrictions of the laws against agreements and understandings in restraint of trade as developed by the courts and subject also to the provision that such information shall at the same time be tabulated and published, and made available alike to producers and consumers. It is believed that the advantage of knowledge of all essential facts which each one must give regarding his own business in order to get similar information from others and make the aggregate statistics accurate and useful, would be sufficient to induce everyone to contribute his quota of information. Publicity would prevent any association doing anything deserving of censure. This remedy requires no new laws. It leaves business relatively free.

"At one time it was believed that the Federal Trade Commission had jurisdiction to receive reports and take appropriate action in case it found an agreement in restraint of trade existed. If publicity had been required, there probably never would have been criticisms of a trade association. The information gathered by trade associations is necessary to the efficiency of the Secretary of Commerce and the Federal Reserve banks, and I sometimes think that the legislative and judicial departments of the government would act with greater wisdom if the statistical information gathered by these associations were published and accessible. Every trade paper seeks it. Every writer on economics must have it. As stated, it needs no new law; but simply to educate the courts and legal departments of the government and states that there is a good reason for such trade associations, other than the opportunity they present to form agreements in restraint of trade."

March Hard-Coal Shipments, 6,778,667 Tons; Total for Coal Year, 67,039,037 Tons

SHIPMENTS of anthracite during March, 1922, as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 6,778,667 gross tons, an increase over the movement in February of 1,539,652 gross tons and over the month of March last year of 1,040,896 gross tons. March, 1922, stands third as a record for that month, shipments in excess of this figure being made during the years when the anthracite industry reached the high water mark, a record of 7,276,777 gross tons being established in March, 1918, and 6,989,075 gross tons in March, 1917.

The total shipments for the coal year ending March 31, 1922, have amounted to 67,039,037 gross tons, as compared with 69,366,731 gross tons shipped during the previous coal year ending March 31, 1921.

Shipments by originating carriers were as follows, in gross tons:

	March, 1922	March, 1921	Coal Year, 1921-1922	Coal Year, 1920-1921
Philadelphia & Reading	1,372,024	1,018,858	13,319,886	13,952,192
Lehigh Valley	1,220,563	1,022,714	11,647,083	12,580,764
Jersey Central	654,679	540,556	6,632,425	5,674,767
Lackawanna	1,047,622	1,020,381	10,218,329	10,140,295
Delaware & Hudson	909,261	837,644	8,998,519	10,195,735
Pennsylvania	523,273	333,687	4,927,204	5,240,868
Erie	654,492	561,013	6,881,690	6,504,683
New York, Ontario & Western ..	154,681	144,930	1,548,303	1,999,761
Lehigh & New England	242,072	257,988	2,865,598	3,077,666
Totals	6,778,667	5,737,771	67,039,037	69,366,731

Legitimate Trade-Association Work Is Vital and Should Be Encouraged, Says Hoover*

Canvass of Nearly Two Thousand Organizations Shows Only Small Minority Engaged in Activities on Which Restraint of Trade Is Founded
—Economic and Social Results to Commerce Should Be Guiding Factor

WHILE the efficiency and ability of our individual business men and industries are of a high character, there are many questions of general interest that they cannot compass without common action. This has resulted in the organization of our Chambers of Commerce and associations among bankers, merchants and manufacturers parallel with associations of farmers, lawyers, doctors, engineers, workers and many other groups.

The multiplication during the past twenty-five years of literally scores of hundreds of associations in these activities means a groping for some vital necessity in our whole system. The benevolent results to the community obtained in thousands of instances is proof of their value. One of our constant national problems is how to obtain these benevolent results of such co-operation without creating dominations of groups that would stifle equality of opportunity; to obtain them without loss of individual initiative; to obtain them and still maintain that competition among individuals which is the sustaining impulse toward progress. I do not believe these things are incompatible.

The legitimate associations in industry and commerce have been well proven to be in public interest. We need only to examine the many functions of the two thousand organizations to demonstrate this.

MULTIFARIOUS ACTIVITIES OF TRADE ASSOCIATIONS

Chambers of Commerce and trade associations have in their own fields concerned themselves with the promotion of our foreign trade, with better preparations of goods to meet the necessities of different markets, with securing of credit information in foreign markets as to foreign dealers, with the dissemination of information as to possible demands, with the supply of goods from competitive countries, the character of these supplies, the customs regulations, transportation of goods, port and warehouse conditions, support of our merchant marine and a thousand items that make for the advancement of our foreign commerce.

They have concerned themselves with the collection of domestic credit information, with the handling of insurance in different forms for their members, with standardization of quality and grades of their commodities and products so that the public may have reliable grades, and some have supported inspection to see that these qualities are maintained. They have concerned themselves with simplification of trade terms, elimination of unnecessary varieties in dimensions of different articles, with conduct of arbitrations, with joint advertising of products of the industry, with securing prevention of infringement in trade marks and designs, the promotion of welfare work in the organization of employees, with employment insurance, with the problems of apprenticeship and trade education and the prevention of accidents. They have raised the standards of business ethics in many trades. They have concerned themselves with representing the views of the trades in legislation on tariff, taxes, transportation, etc. They have concerned themselves with freight rates, overseas transportation charges, uniform bills of lading, with statistics as to production and stocks of goods, with scientific accounting, selling and with scores of other activities, all of which make for improved business practice.

It would be possible to demonstrate that these activities have resulted in great savings in costs of production and

distribution amounting to enormous sums of benefit to both producer and consumer.

Furthermore, our costs of distribution and manufacture have increased greatly due to increased taxation and other burdens we cannot avoid. If we would reduce these charges and thereby enable farmers to buy more and to increase our employment, we must advance in every direction to further decrease these costs and eliminate wastes that we can find.

There is one generalization in connection with this movement that has been mostly overlooked. The trade association in membership is predominantly made up of the smaller establishments. Big business can employ its own agents in all these matters. It can establish its grades and standards, it can employ its own research laboratories. Little business can only hope to be equally informed and make equal efforts to promote its welfare through trade associations.

The law provides that the Secretary of Commerce shall promote trade, industry and transportation. In the reorganization of the Department of Commerce that it might become of far greater real service to our whole public we have sought to co-operate with industrial and commercial organizations, agriculture and labor in promotion of marketing abroad, in employment, in transportation, in elimination of wastes and improvement of our industrial technology, statistical services and information, and in many other directions.

These problems become practical problems of day-to-day contact with commerce and industry if we would learn the direction in which real service can be accomplished. Such contact can be obtained only through trade and industrial organizations, for without organization there can be no representation. We hold that legitimate trade-association work is vital and should be encouraged.

A FEW GROUPS HAVE CAST SUSPICION ON ALL

Certain doubts have been raised as to the right purpose of all trade associations during the past year by the exposure of a few groups that have taken advantage of the benevolent purposes of trade-association work as a cloak to create combinations through which they not only restrained trade but some of them also became the nuclei of corruption. I wish to state at once that a canvass of nearly two thousand trade associations showed that only a small minority were engaged in those functions which lay the foundations upon which restraint of trade is suspicioned.

Recently this department addressed to the Attorney General certain questions for its guidance in its relation to various functions of associations and received his views thereon, which have been communicated to the public. I cannot, nor would not, add nor subtract anything from what the Attorney General has stated. This conference was called at the request of many associations who wished to present their views upon the relations of their associations to this development. This department cannot interpret the law and has no intention of doing anything of the kind.

It is obvious that the Department of Commerce cannot establish co-operative relations with associations who maintain types of practices that have been condemned by the courts. Beyond this again there are some two or three functions carried on by a small minority of trade associations the legality of which has been questioned but not yet determined. These are in the main the so-called open

*Address delivered by the Secretary of Commerce before the Trade Association Conference, Washington, D. C., April 12, 1922.

price associations, which are collecting data on prices and sales of their individual members, and circulating such individual data again to their members together with certain other activities.

I wish to state frankly and at once that the officers of the government do not believe that these functions are in public interest, whether they are used in violation of the law or not. The department laid down the rule nearly a year ago that it could not co-operate with associations subject to such criticisms and sees no reason to change it.

The labor unions solved this matter in obtaining legislation giving them practical immunity from the restraint-of-trade laws. Lately the farmers have done the same. The commercial and manufacturing community has not asked for more than some interpretative help in questions along the twilight zone of trade restraint. The Federal Trade Commission was originally conceived in the sense of providing some measure of interpretation of the law, but these provisions were largely stricken from the original legislation.

Lately Senator Edge and Congressman MacArthur have introduced into Congress a proposal for a joint Congressional inquiry to be held for the purpose of considering this situation. I believe it would be in public interest if the experience of recent years were inquired into by such a committee. The problem is not one of purely legalistic interpretation, for in the final analysis much must depend upon the economic and social results to the community. The whole commercial community is vitally interested in the limitation of co-operative action in the necessary prevention of restraint of trade. It is the duty of this department to study the economic effect of the law and we are glad to have your views in the matter. The real problem is to avoid destroying the good in uprooting the evil. Men have been murdered with brickbats, but that is no reason for prohibiting brick houses.

FEATURES ATTACKED ARE OF MINOR IMPORTANCE

But after all, these questions of the twilight zone are quite secondary. The functions that are challenged are so small a part of trade-association work and so unimportant in the larger matters of commerce and industry that the associations in vast majority concern themselves with.

In the matters of day-to-day co-operation that go on in connection with trade organizations I wish to emphasize that the efforts of the department are purely co-operative. They are not imposed upon anyone. We do not want any relations that are not based upon an expressed wish to establish such co-operation in the advancement of the different industries. I propose to have the details of the bureaus of this department, which need co-operation by the associations, more fully presented by our department heads later on.

I would give this review. Our foreign trade is one of intense and different technology in every different commodity. Moreover, the laws, customs, transportation, the demand and supply problems vary with every commodity in every country in the world. Congress over many years had given support to a large foreign staff seeking to serve the American farmer, manufacturer, exporter in these matters. These staffs were comprised of men of general trade knowledge but they were not specialists. No mortal could possess the special training required for all commodities for all countries. Congress, therefore, approved our recommendation that the Foreign Trade Division of the Department of Commerce should be divided into specialized branches. Even something more than specialists in a department were needed, for we must obtain intimate contact with the men in the different industries themselves. We, therefore, co-operated with several trade associations to appoint special committees who should give direction and strategy to our agencies abroad on behalf of the whole industry. The result has been to place these energies in the channels where the sale of actual goods has been promoted; to dictate the character of information needed for their special trades, to promote the economic handling and reduction of risks in foreign business.

This basis of co-operation so far as has been developed is beyond our highest anticipations. The growth of inquiries

from the commercial public to this division from a few hundred daily to several thousand daily is only one evidence of the usefulness of this co-operative effort. I do not wish to lay too much emphasis on this service; it is worth noting that our foreign trade has decreased in less proportion to prewar than that of the other nations of the world and I believe the devoted work that we have received from American business men in this particular has saved us from much larger decreases and promises much for the future. We would be glad to extend it to other industries.

Another field where we have entered into joint work with various trade associations is in the advancement of their efforts at simplification of trade terms, in the simplification of general specifications, simplification of dimensions of many and varied products, all of which makes for cheaper production, cheaper distribution, emphasizes competition and ultimately benefits the consumer as well as the producer.

We have co-operated in carrying out investigations into the technical processes of manufacture with many different industries, thus having the advantage of men of practical experience from the trade associations in co-operation with our scientific staff. The whole of this field of elimination and utilization of waste is one of the most important before our commercial and industrial development and one that can be accomplished only by co-operative effort on scientific lines.

The third field in which we have had much co-operation has been in the development of the government service devoted to publication of statistics on production and distribution of commodities. These services had existed in the government for many years and the problem was to make the materials of greater value to the commerce of the country. In these matters we have had the co-operation of many trade associations. These services need further development in the interest of the whole community. Statistical information as to productivity and national stocks is needed not alone by the man in a particular industry but the same information is needed by men in other industries and it is needed by every agency of the government. A study of the trend of production and consumption does not imply restraint of trade. If it does then the whole statistical basis of commerce that fills one-third of our newspaper space would need to be abolished. If we abolished it we would be bankrupt in ten years. The matter that I am principally interested in is that this information should be available to the whole public. It is the old question as to whether a community will succeed if it acts in ignorance or if it acts in knowledge.

Appropriation Amendment Forbids Court Proceedings Against Striking Miners

ON a second attempt, Representative Johnson, of Kentucky, was successful in obtaining the adoption in the House of an amendment to the Department of Justice appropriation bill forbidding the prosecution of labor unions or associations of producers of farm products under the anti-trust act. The measure is designed to prevent court proceedings against striking miners. In committee of the whole the House by a vote of 27 to 26 adopted the Johnson amendment. In the House an attempt to obtain a separate vote on this amendment failed, and it was incorporated in the bill, which now goes to the Senate for action.

The amendment forbids the expenditure by the department of any sum in the prosecution of any organization or individual for entering into a combination or agreement having in view the increasing of wages, shortening of hours or bettering the conditions of labor or for any act done in furtherance thereof not in itself illegal, and forbidding prosecution of producers of farm products and associations of farmers who co-operate to obtain and maintain reasonable prices for their products.

Representative Husted, of New York, said he was opposed to class legislation, of which the Johnson amendment was the "ranked kind," and he desired to emphasize it by offering an amendment covering mineral producers, including, of course, coal operators. Mr. Husted's amendment was defeated, whereupon the Johnson amendment was adopted.

The Second Week of the Coal Strike

EDITORIAL REVIEW

IF there is any one thing outstanding in the second week of the strike it is that the interest of the public is waning. From front page headlines to obscure single column heads in the back of daily papers in one week marks the progress of its popular appeal.

There are two spots in the country where the strike is beginning to cause some apprehension. One is the steel industry in the East, the coal supply of which has been affected by the marked progress of the union in cutting off non-union production in the Connellsville regions. The other is in and around New York, where large consumers, particularly public utilities, whose source of supply of non-union coal from central Pennsylvania is now largely if not wholly cut off by strikes. In both cases the situation at the moment is in the uneasy stage. New York drawing on Hampton Roads for coal to replace that lost in central Pennsylvania and the steel interests drawing on eastern Kentucky and the high-volatile fields of southern West Virginia are the only features that lend any strength to the coal market, which everywhere else throughout the country is characterized by lack of demand and weak prices.

In West Virginia the operators are attempting through the use of the injunction to hold the union in check and to prevent the spread of the organization to the non-union fields. Four temporary injunctions were granted last week by the Federal Judge at Charleston, none of which has as yet been made permanent.

The shutdown in union fields continues as complete as in the beginning. Lack of market continues to limit output in southern West Virginia, Virginia and other non-union fields of the South. The New River field is not actually entirely shut down but practically so.

There are no indications anywhere of a break in the ranks either of the operators or of the union. The anthracite miners and operators in their negotiations in New York have made no progress and are generally supposed to be deadlocked, neither side so far indicating any inclination to bargain.

The federal intervention that John Lewis is understood to have promised the bituminous miners as the road to victory for them is no nearer now than a month ago. Attorney General Daugherty by his enigmatic statements before and after consulting Judge Anderson at Indianapolis has not helped to clear the air. If Mr. Daugherty has said anything it is that the miners and operators would be courting another indictment were they to make another joint agreement.

Brophy Explains Violation of Rule 25

JOHAN BROPHY, president of the United Mine Workers of District No. 2, in a communication to Governor William C. Sproul, of Pennsylvania, on April 10 entered a protest against the manner in which it is alleged that the state police are being used against the miners now on a strike in the district. He also protested the eviction of union miners from non-union properties where they have gone on strike.

In his answer to the charges made by the Central Coal Association that the strike in central Pennsylvania is a violation of Rule 25, he makes it clear that the miners will stand firm, as shown in this excerpt from his statement:

"There are two facts in the present crisis—a big fact and a little fact. The big fact is the notice of wage reductions posted at the mines—a printed placard with reductions of from 32 to 54 per cent. This is the expression of the earnest efforts of the operators for the last twelve months. The little fact is a clause in the scale agreement, a clause which they use as a talking point to divert public attention from the drastic attack on the wage and living conditions of the miners. The clause is Rule 25 of the scale agreement.

"Rule 25 is contingent on the uniform and unbroken practices of collective bargaining in the the industry. Rule

25 was inserted in the district agreement in 1912, in order to give the district time to negotiate an agreement after the basic rate had been set in the Central Competitive Field. It assumes that contract negotiations are under way there to provide a basis for the outlying districts.

"If no negotiations are under way in the Central Competitive Field, there is no Rule 25. The Central field negotiations are the hook on which Rule 25 hangs.

"The use of the Central Competitive Field as a national basing point represents the industry's one great advance over the cut-throat competition and chaos of unrelated local and district agreements. We agree with certain operators that the system is imperfect, but the way to remedy these imperfections is not by going backward to discarded methods but forward to a national basic agreement."

Shows Central Pennsylvania Men Earn \$1,319 Yearly; Union Alleged \$760

GWEBB SHILLINGFORD, president of the Central Coal Association, has issued a statement in which he stated that his association has made a study of the annual earnings from 1914 to date for all employees in the mining industry, and it discloses the following results:

AVERAGE EARNINGS (FULL TIME) OF BITUMINOUS MINE WORKERS IN CENTRAL PENNSYLVANIA.

(Includes tonnage and day workers except superintendents, mine foremen and clerks.)

Year	Net Tons	Days Wkd.	Employees	Per Day When Mine Works	Monthly Earnings	Yearly Earnings	Total Earnings
1914	48,692,353	202	62,389	\$3.32	\$55.92	\$671.09	\$41,868,785
1915	52,202,406	207	59,276	3.66	63.10	757.16	44,881,193
1916	56,063,852	240	55,196	3.77	75.42	905.06	49,955,476
1917	58,658,817	239	59,166	4.81	95.75	1,148.99	67,980,850
1918	60,515,118	259	56,768	5.77	124.58	1,494.92	84,863,708
1919	46,546,381	194	56,413*	6.04	97.66	1,171.86	66,108,240
1920	58,172,416	226	56,413*	8.35	157.29	1,887.46	106,477,140
1921	39,163,074	138	56,413*	9.56	109.95	1,319.42	74,432,160

Absenteeism: Tonnage workers, 17.6 per cent; day men, 8.8 per cent. Number of days worked and number of employees taken from Pennsylvania state report.

* Estimated.

This table shows that men working during the year 1921 earned \$9.56 for eight hours, or about \$1.20 per hour, while the rate for workmen in building state roads is only 30c. an hour.

Mr. Shillingford said that if the coal-consuming public were willing to pay \$9.56 for eight hours work, the miners are right in this fight. If they believe that wages in the mining industry ought to be placed upon a parity with wages in other industries, the operators are right.

The statement made by the representative of District No. 2, United Mine Workers of America, before the Labor Committee of the House of Representatives, that \$760 was the annual earnings of miners in this district last year is absolutely untrue, and the witness admitted on the stand that this figure did not include wages paid for day labor, which is 35 per cent of the total cost, cutting and scraping, pushing cars, yardage and deadwork or extra pay for deficiencies.

The principal reason given by the United Mine Workers of America for the maintenance of the war-wage scale, and their demand for a six-hour day and a five-day week is intermittency of employment suffered by the mine workers. A great deal of the loss of working time suffered by the union mines of central Pennsylvania during the year of 1921 was caused by business being taken away from the union mines and absorbed by the mines that had made the necessary wage readjustments. It is an admitted fact that the coal-mining industry is overdeveloped and overmanned. The question of overdevelopment is a matter of individual investment and the exercise of the American right to enter into any legitimate business which the operation of natural economic laws will adjust.

The excess number of men employed in the mining in-

dustry is due in a large measure to the very high wage rates paid in the coal mines of the country, as compared with the wages paid in any other industry employing such a large percentage of common labor, thereby attracting men to the industry.

Windber miners to the number of 2,200 met last week at Scalp Level and organized a local branch of the United Mine Workers of America. They elected James R. Murray, president; James Gibson, vice-president; Patrick Ryan, recording secretary; Stephen Foster, financial secretary; Martin Madigan, treasurer. The Windber local is made up of men from the Berwind-White mines.

More Injunctions

UNION activities in all the smokeless fields of West Virginia and in one high-volatile district were under the ban by the end of the second week of the strike, Judge George W. McClintic, of the District Court for the southern district of West Virginia, having granted two more injunctions on Friday, April 14, in addition to the two issued by him on April 8 and 10. The third and fourth injunctions restrain all union activities in the New River field, which toward the end of the second week of the strike had become the scene of several acts of violence having for their purpose the intimidation of non-union miners.

The fourth injunction was obtained by the Aetna Sewell Smokeless Coal Co. and 62 other companies in the New River field.

In addition to union officials the injunction named as a defendant the Very Top Seam Coal Co., which company has recently been collecting the check-off. The third injunction was obtained by six other coal companies, applying specifically at their plants.

The injunction prohibits any attempt to create a monopoly of labor which might have a tendency to unreasonably increase the price of labor and also prohibits the use of money, *persuasion*, menaces, force, intimidation, violence, counsel or any other means whatever to cause laborers to join the mine workers' union. Furthermore, mass meetings are prohibited, as are marches in the different fields. The assemblage of miners on property belonging to the coal companies is specifically prohibited.

Keeney Defiant Toward Injunction

AMONG those who will face trial at Charles Town, W. Va., on April 24, charged with various offences, are C. F. Keeney, president of District 17, Fred Mooney, secretary of that district, and William Blizzard, president of a subdistrict. Indictments against some of the two hundred or more defendants who will face trial charge treason, murder, insurrection and conspiracy and it is understood that the prosecution in some cases at least will ask that the extreme penalty be imposed.

Notwithstanding the serious charges which Keeney and his associates must answer, he appears to be in a mood to defy the injunction which Judge McClintic issued on April 10 in order that the Mingo tent colonies be dismantled and those living in such colonies be disbanded, and that all union organization work be suspended.

Northern West Virginia Operators, Restating Position, Deprecate Miners' Resolution

EXCEPTION has been taken by the Northern West Virginia Coal Operators Association to a set of resolutions adopted by miners at Kingwood, W. Va., and sent to President Harding asking that he compel the operators to negotiate with the miners, the protest of the operators being based on the fact that repeated efforts were made before the strike to negotiate a scale with the miners and two conferences held, all of which were without result because the miners of this field were not permitted to negotiate a separate agreement.

The gist of the protest made by northern West Virginia operators is that they have already sought conferences with the officials of District 17. Their position is set forth in the following statement by Secretary George S. Brackett:

"This strike, or cessation of operations, or whatever the

miners may call their walkout, is something beyond us entirely. We have tried our level best to find out what the strikers want. They are not striking over wages, hours, working conditions or anything that we could adjust. They simply refuse to meet us, and are using West Virginia as a pawn in the game to chastise the operators of Ohio, Indiana, western Pennsylvania and Illinois. Our mines are closed and our men are idling merely because the miners' leaders cannot get an agreement from operators in states that have absolutely nothing to do with us. Less than 6 per cent of our coal competes with the coal from those states and our conditions are entirely different. We have twice sought meetings with our men's representatives to explain this, but they refused to discuss the matter. Now they, at the meeting in Kingwood, give the impression that they want the public to forget their refusal.

Anthracite Operators Withhold Announcement of Wage Cut They Will Demand

NOT much progress was accomplished by the joint subcommittee negotiating a wage scale for the anthracite mine workers at the three sessions of that body held in New York City last week. On April 13 an adjournment was taken until April 18 to enable both operators and miners to spend the Easter holidays at their homes.

During the three sessions of the committee the issues involving the establishment of wage rates where mechanical loading is done, the establishment of uniform wage rates for the same class of work and the demand of the miners asking payment for all sheet iron props, timber, forepoling, extra and abnormal shoveling and cribbing were discussed. Discussion also was had on the demand of the miners that where coal is paid for by the car it shall be changed and payment shall be made upon a legal ton basis or 2,240 lb. and that the dockage shall be eliminated.

During the week informal statements were issued by both sides in which the matter of increases in pay for the miners and freight rates were some of the matters discussed.

The operators began the presentation of their case on April 11, and it is believed that it will take several weeks before it is completed. It was expected by the public that the mine owners would make known at this time the reduction in pay they would demand that the mine workers take, but it was not forthcoming. Because of the plentiful supply of coal and the absence of excitement the public seems to have lost interest in the present negotiations.

Colorado Suffers Less and Less from Strike

COLORADO is suffering less and less by reason of the strike. The southern bituminous fields are producing more than they did before April 1, though the lignite fields in the north are producing less. The reopening during the past few days of one of the Victor-American Fuel Co.'s mines on an open-shop basis marks a weakening of the union's former grip. The Victor-American mine is the Delagua property. The company's other six mines, once operated on a union basis, also will be opened soon with non-union men, it is reported.

Following the Colorado Fuel & Iron Co. wage reduction last November, the Victor-American mines were idle for a few weeks until the miners requested that the operations be reopened at a reduced scale. The union agreed to a revision downward, so that the company could compete with the Colorado Fuel & Iron Co.

The latter company has set a new high record in the southern bituminous fields since the strike, with a daily production of more than 9,000 tons. Approximately 3,000 miners are at work in these mines, a gain of nearly 500 over the first day of the strike, and indicating close to 90 per cent of normal production. This company produces practically one-third of the coal mined in the state.

Frederick, Puritan and Columbine mines are operating in the Weld lignite district with about a 25 per cent force. Rangers have been drawn into the strike zone, but conditions are quiet. Laborers there apparently will accept the \$5.45 a day offered instead of \$7.90, the wage paid until recently, for there are more miners than jobs.

Administration Continues Hands-Off Policy, But Expects to Be Dragged Into Strike

By PAUL WOOTON
Washington Correspondent of *Coal Age*

FLATNESS of the market and the number of non-union men who have joined the ranks of the strikers are the outstanding features of the second week of the strike. The strike had not progressed far into its second week when, in the judgment of newspaper editors, public interest did not justify the continued appearance of strike news on the first page of their papers.

That the action of so large a number of non-union men in joining the strike came as a complete surprise is demonstrated by the fact that the estimates of production made before the strike was called all counted on Pennsylvania's full non-union production. The action of the men in the southern portion of the Connellsville field is attributed to the infiltration of union workers. While they have been willing to work in the non-union mines, they have been otherwise loyal to labor organization principles. As a result they have been effective missionaries. Some are of the opinion that infiltration is a part of the strategy of the United Mine Workers.

While consumers responded wholeheartedly to the warning that stocks must be built up prior to the strike, there has been a tendency since April 1 to forget their responsibility. The union has not forced production down to 3,500,000 tons a week. It has been the buyers. Every rebuilding point is jammed with cars of unsold coal. There were 22,000 cars of unbilled coal awaiting consignment at the end of the week. Since there is every prospect of an extended strike, the advantages expected to come from the building up of stocks will be lost unless they are maintained. With production at its present level and with consumption exceeding production by 5,000,000 tons a week, the country's coal pile will disappear rapidly. Unless buying begins promptly, the mine workers' prediction that the country will be yelling for coal within a month is likely to be more nearly accurate than the forecasts of some of the other pencil prophets. The very fact that the strike story was crowded off the first page of the newspapers so promptly and the refusal of the public to get excited over the controversy is the more reason why it is likely to lose sight of the fact that its ability to withstand a siege is being lessened at a rapid rate with each passing day.

CONSIDER TRIBUNAL SIMILAR TO RAIL LABOR BOARD

The administration's policy continues to be an emphatic one of hands off. It is recognized that sooner or later, if the strike lasts, the Federal Government will be dragged into it. Thought already is being given to some sort of tribunal to which may be entrusted the task of handing down a decision by which both parties to the strike must abide. Since the experience of the railroad executives and the railroad brotherhoods there has been much less talk of the uselessness of the Railroad Labor Board. Resort may be had to a similarly constituted body to decide the coal issues. Some months ago when both the brotherhoods and the railroad executives were loud in their denunciation of the Railroad Labor Board, a conference between them was arranged after each had contended that the Labor Board is a fifth wheel on a wagon, and that they could settle all their differences between themselves. They met in direct negotiations under the most propitious circumstances. The situation was not acute and there was plenty of time to discuss the questions at issue, yet they failed absolutely to reach an agreement and have gone back to the Labor Board.

The public welfare is dependent upon coal to almost the same degree as it is on transportation. When the public begins to suffer material losses, some plan of settlement will be forced on operators and men alike. Before April 1 the operators were quite willing to submit the whole matter to arbitration, and the United Mine Workers consistently refused to consider such a course. There is nothing to indicate that either side has changed in this regard. The coal diggers argue that all arbitration is a compromise and

that it is justice rather than a compromise that they are after. Incidentally, it may be stated, when they announced that view they were not willing to accept a suggestion that deliberate justice be meted out by a disinterested tribunal which would be set up for the purpose. Just at this time, however, both operators and miners are thinking seriously that this may be the best way to reach a settlement.

With the strike have come numerous suggestions for the cure of the ills in the coal industry—the industry, as one official puts it, that furnishes half-time employment and tries to pay double wages. One suggestion is for the consolidation of mines by districts so that the inefficient mines may be absorbed. The reaction to that in official circles is that such a plan would amount to nationalization. If district-wide consolidations were permitted, the public would demand government control. Just at this time the last thing the administration wants to do is to enter on any type of regulation or control of coal. The suggestion is put forward that perhaps a more workable plan would be the setting up of common selling agencies in each district. So far as seasonal freight rates on coal are concerned, it is safe to say that the administration is far from convinced that this plan would plane out many bumps. In fact the official opinion, in some quarters at least, seems to be that there is no seasonal element of great consequence in the coal industry. Officials are hopeful, however, that the industry itself can work out some plan of the sliding scale of wages based on a six-day week.

Since there is no sign of compromise between the anthracite operators and miners, the opinion is expressed in Washington that the anthracite strike is more likely to be long drawn out than is that in the bituminous industry. Anthracite stocks are the subject of considerable speculation because the producers have released no figures. There are rumors afloat placing anthracite stocks at almost unbelievably large figures.

No Outbreaks in Illinois

ILLINOIS went through the second week of the strike without notable disorder and without any move having been made by either operators or miners of that state that appeared to bring a settlement closer. The state was criss-crossed constantly by rumors, however. John L. Lewis, president of the United Mine Workers of America, during a visit at his home in Springfield late in the week took occasion to deny one. It was to the effect that the miners' policy committee had given him a certain length of time within which to procure government intervention. If he failed, the rumor had it, the committee would take complete charge of the situation for the miners.

Harry C. Adams, president of the Central Illinois Operators' Association, returned to Chicago from a trip through his field last week and reported that some of the engineers supposed to stay on duty at the pumps had quit and that company men had to be put on the jobs.

Members of Gillen Board Resign; Minister of Labor to Appoint New Body

THE Gillen board, reconvened by the Dominion Minister of Labor a few days ago, to conduct a further inquiry into the Nova Scotia coal mining troubles, has ceased to exist and in its place a new board of conciliation and investigation has been provided for by James Murdock, Minister of Labor, under the Industrial Disputes Investigation Act, to carry out the duties placed before the Gillen board when reconvened.

U. E. Gillen, of Toronto, chairman of the board, and James Ling, Mayor of Waterford, N. S., resigned from the reconvened board, and their resignations were accepted by Mr. Murdock, who then proceeded under the Industrial Disputes Investigation Act to provide another board to carry on the work.

The Minister of Labor stated that he would at once request both the employers and employees to recommend the name of a person competent to act as a member of the board of investigation.

House Bill Proposes Mine Operation Under Court Receivers as Strike Remedy

OPERATION of coal mines under court receivers during periods of suspension is proposed as a remedy for the existing strike situation by Representative Huddleston, of Alabama, in a bill introduced in the House April 12 and referred to the Interstate Commerce Committee.

The bill provides as follows:

That whenever a mine used for the production of coal for interstate commerce shall suspend such production, the district court of the United States for the district in which said mine is situated, or the presiding judge thereof, if such court be not in session, shall, upon the petition of the Attorney General, appoint a receiver for the said mine and the equipment, appurtenances, plant and other property used in connection therewith.

That subject to the direction of the court, the receiver so appointed shall operate the said mine and property for the production of coal until the release and restoration thereof to the possession of the person, firm or corporation entitled to such possession shall be directed by the Attorney General or until such person, firm or corporation so entitled to possession shall reasonably satisfy the court having jurisdiction of the proceeding that operation of said mine will be proceeded with if so released and restored.

The bill also prescribes new rules for car distribution to coal mines. It proposes that the Interstate Commerce Commission shall allocate and apportion to each mine or to each operator of a group of mines "a just proportion of cars suitable for transporting coal."

Such allocation shall be made annually as nearly as may be and shall be based upon findings as to capacity of mines, quality of product, demand and market therefor, prices at which coal is sold, and such other factors as may relate to the public welfare. Upon such allocation being made it shall be the duty of the railroad to supply cars as provided by the allocation, and for failure to do so shall be liable to a fine of not less than \$25 nor more than \$100 for each car as to which it may be in default for each day of such default.

Hazard Field Merger Still in Embryo

THE proposed merger of every coal mining operation in the Hazard field of Kentucky did not progress far enough during the negotiations of the past week to justify any announcement by those interested. It was stated, however, that the consolidation plan has not fallen, and that the merger is "more than merely possible," but that it cannot be effected for several months at the earliest. If it is effected, it may consolidate merely the dozen independent operations of that field or it may envelop the entire field, including the Blue Diamond Coal Co. and the Southern Coal & Coke Co. If only the limited plan is worked out, a huge corporation will be the result, with a capitalization close to \$25,000,000. In either case, it is said, great economies could be made in mine management and in selling.

Mr. Daugherty Uses Words

AFTER his conference, on April 10 and 11, with Judge Anderson, L. Ert Slack and others, at Indianapolis, Attorney General Daugherty, referring to a prospective wage conference, said the government had not opposed a conference, but had presumed one would have been held before April 1, "for the parties to agree upon a legitimate program." After asserting that the government could not force a conference, his statement added:

"Whether a meeting is held or not, the government will maintain successfully, by any proceeding that may be necessary, that agreements heretofore reached between the operators and miners, year after year for many years, which are a violation of the law and for which indictments have been found, shall not be repeated. Repetition of these things will be to the disadvantage of the government's policy because they are a violation of the law and work a hardship upon the consuming public. No 'horseplay' or pretended misconception on the part of anybody will change the government's position in this regard.

"As to the indictments pending in this court for violations of the law on the part of many of these parties heretofore, I have only this to say: That certain things charged in the indictments were violations of the law, and the government will not, by trade or compromise, consent to them being done again. If many of the things done at

these meetings time and time again are not repeated, miners will get a fair return for their labor, operators will get a fair return on their investments and the consumer will get the product he is entitled to at a fair price.

"The country is tired of compromises, especially when the compromise is so expensive to the country and the consuming public. We are in favor of a settlement of these propositions on fair lines and in a positive way, in order that the government will not be compelled to interfere with business. For many years, as the time expired for these so-called meetings, the country was the innocent victim of these bi-annual meetings and pretended virtuous adjustments. The government recognizes that stability is necessary, and is willing to protect each of these parties in the performance of legitimate and lawful pursuits on the one hand, and to prevent their doing an unlawful and improper thing, to the detriment of the government and all of the country, on the other hand."

Bland Prepares New Bill for Fact Finding In Coal Production and Distribution

A BILL creating a federal fact-finding agency to gather all possible data on the production and distribution of coal is being prepared by Representative Bland, of Indiana, for presentation to the House Labor Committee, for consideration in lieu of his former bill proposing that the President appoint a commission to investigate wages and other conditions in the industry. Mr. Bland takes the position that before legislating on the coal situation Congress must have in its possession all possible facts on the subject, and that these should be obtained by a federal agency.

He expects to lay the bill before the committee this week and will urge its favorable report to the House with a view of obtaining early enactment. The bill will differ from other bills of a like character in that it will not provide for activity in fact finding by the Federal Trade Commission. Mr. Bland proposes that the fact finding body shall be made up of representatives of the Bureau of Mines, the Geological Survey, the Bureau of Labor Statistics and the Census Bureau.

Pennsylvania Supreme Court Hears Appeals On Anthracite Tax and Mine-Cave Law

BY a special order the Pennsylvania Supreme Court on Monday, April 17, heard arguments on the constitutionality of the anthracite tonnage tax act passed at the last session of the state Legislature and declared valid by a recent decision of the Dauphin County courts.

Attorney General George E. Alter handled the argument for the commonwealth with Attorney Henry S. Drinker, Jr., of Philadelphia, for the coal companies. Attorney Reese H. Harris, of Scranton, and former Judge F. W. Wheaton, of Wilkes-Barre, also argued for the coal companies.

The case came before the Dauphin County Court through a bill in equity filed by Roland C. Heisler against the Thomas Colliery Co., its officers, the Attorney General and the State Treasurer to restrain the defendants from imposing an ad valorem tax of 1½ per cent on the value of anthracite coal produced. Mr. Heisler is a stockholder in the Thomas Colliery Co. The Dauphin County Court dismissed the bill and held the act constitutional, whereupon Mr. Heisler appealed.

This will mark the second time for the Supreme Court to pass on the constitutionality of an anthracite tonnage act. In 1913 a similar bill, known as the Roney act, was passed. This was declared constitutional by the Dauphin County Court, which decision was later upset by the Supreme Court. This act levied an ad valorem tax of 2½ per cent on all anthracite coal produced.

Also scheduled for argument was the constitutionality of the Kohler mine-cave law, the same attorneys representing the Pennsylvania Coal Co. in this case.

Three More Mines Build Top Works

ACTIVITY in equipping and improving mine properties, a program now noticeable in several mining fields, is making itself felt in Indiana and Kentucky. Three construction jobs involving expenditures of almost \$100,000 were reported recently. All of them are now under way and should be completed within sixty days.

The building of a new steel tippie at the Standard Coal Co.'s mine at Wheatland, Ind., on the Baltimore & Ohio R. R., together with the installation of an entire new preparation plant involves a novel and interesting scheme. It was necessary to put in better screening and loading apparatus. But the shaft is too close to the loading tracks to permit of the usual placing of the new plant. Therefore Allen & Garcia devised a system of back dumping into the weighpan. The coal goes from there over a special docking table and steel apron conveyor circling around to the front of the shaft, over picking tables and screens to a loading boom of the latest type. There is said to be no other plant in the country like this one. It will cost something over \$60,000.

The Stearns Coal & Lumber Co. is installing machinery at both its White Oak and Fidelity mines at Stearns, Ky. The White Oak operation has been producing nothing but mine-run coal since it started over two years ago. It is now being equipped with shaker screens for making four sizes and with loading booms for properly placing the coal in cars. This installation will cost the neighborhood of \$12,000.

At the Fidelity mine two slopes extend into hills on opposite sides of a hollow. The tippie for both stands beside the railroad midway between. The south mine has been producing for some time. A belt conveyor on a bridge carries the coal down to the tippie. The north side is just ready to begin production. A retarding conveyor for mine-run coal is now being installed and will soon be ready to deliver the mine's output to the screens at the tippie. The investment in this conveyor installation is approximately \$14,000.

Navy Authorities Estimate Year's Coal Needs at 376,906 Tons

ESTIMATES of coal requirements for the navy for the coming year's operations are based on 440 vessels being in commission, cruising an average of 16,200 miles for the year. The fuel estimates were explained to the Senate Appropriations Committee by naval officers in charge of fuel purchases and operation of ships, and were subjected to close questioning, due to the recent conflict of the committee with the navy in its effort to reduce fuel expenses.

The navy authorities said they contemplate purchasing 376,906 tons of coal at \$8.84 a ton, or a total of \$3,335,241. It is contemplated to use 60,000 tons of coal in vessels on the Pacific coast from stock already on hand while 110,000 tons will be sent to Pacific coast points by commercial vessels. The navy has a two-year supply of coal on the Pacific and Atlantic coasts, of which 43,000 tons are at San Diego, 107,000 tons at Tiburon and 30,000 tons at Puget Sound. It is estimated that 140,000 tons of coal will be used on the Pacific next year, of which 45,000 tons will be taken from stock, which will be replaced by sending an additional 95,778 tons for current needs and to maintain storage reserves.

Freight Car Loadings Recede 19,024 Week Of April 1, Due to Drop in Coal Movement

FREIGHT-CAR loadings during the week ended April 1 totaled 827,011, compared with 846,035 during the previous week, or a decrease of 19,024 cars. This was, however, 163,840 cars in excess of the total for the corresponding week last year but 31,816 below that for the corresponding week in 1920. The reduction compared with the week before was due principally to a falling off in coal shipments resulting in part from the strike of coal miners which became effective on April 1. Coal loadings totaled 184,952 cars, 19,634 under the preceding week.

Secretary Hoover Restates His Position on Open Price Associations

WHERE the Secretary of Commerce stands on open price associations is forcibly set forth in a statement and letter from Mr. Hoover on April 13 in reply to certain published criticism by Samuel Untermyer, of New York. Mr. Untermyer, it will be remembered, has spent the last two years as counsel for the Lockwood Committee of the New York State Legislature, digging out combinations in restraint of trade in the building industry, and recently took exception to the support Secretary Hoover is giving to the trade-association movement.

Mr. Hoover's comment on Mr. Untermyer's criticism was as follows:

"Mr. Untermyer's statement apparently arises from his oversight of the word 'not' in various statements of this department on its economic views and relations to trade associations. Far from extolling so-called 'open price associations' the department has consistently stated that it cannot and does not approve of them on economic grounds. Whether legal or illegal they constitute less than 10 per cent of the trade associations of the country. It is the function of this department to deal with the 90 per cent of constructive elements in American commerce and industry, while it is Mr. Untermyer's business to deal with the minority of destructive elements. My reply to Mr. Untermyer's letter was as follows [under date of April 11]:

REVEALS CONTENTS OF REPLY TO UNTERMYER

"I am in receipt of your letter of April 8, in which you suggest that I desist from co-operative work between this department and trade associations. I also notice you state:

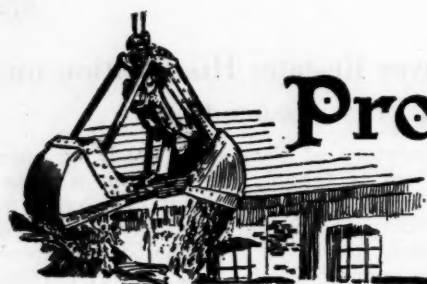
"There are, of course, a great number of legitimate trade associations throughout the country, of which the Illinois Manufacturers' Association is an illustration, that are performing invaluable services to the business world. They should be assisted in every possible way in enlarging their usefulness, but the associations of that character require no instructions as to what they may or may not lawfully do. I am very familiar with the activities of the trade organizations of this class and know of none of them that have drifted into the twilight zone between legality and illegality."

"If you will read my various public statements referring to this department's work you will find that they are in agreement with the above paragraph, and that this very type of associations co-operate with this department in many matters such as foreign trade, transportation, employment, simplification of methods, improvement of processes and a dozen other subjects of public welfare.

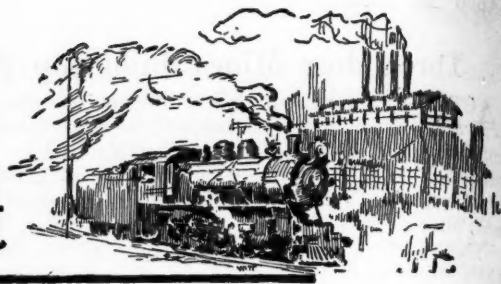
"As this department is advised by the Department of Justice and its own eminent counsel, I believe it is in position to know the difference between legitimate trade associations and those associations which are cloaks for violation of the law.

"Upon my return from the West my attention was called to various communications from yourself in the press in which you persistently reiterate that I have 'in public speeches, newspaper interviews and articles, been championing and insisting upon the legality of so-called open price associations.' All this sounds strange to me, for ever since I undertook this office, and in exactly the above manner, I have repeatedly stated that legal or illegal (and the legality has not been determined) I did not consider open price associations to be in public interest. Indeed, such a statement was made by me on the occasion of the statement to which you addressed your remarks and must have been overlooked by you. I trust you will correct the misimpression you thus convey.

"I note your suggestion that at the forthcoming conference of trade associations here, consideration should be given to a bill which you have laid before the State Legislature at Albany. I therefore assume that you believe such a conference will be of purpose if it considers this legislation. I shall take great pleasure in bringing it to your attention, although the department could not properly advance opinions upon state legislation."



Production and the Market



Weekly Review

THE striking feature of the bituminous coal market at the beginning of the third week of the suspension is the lack of interest of buyers in all but very local markets. The only activity that might ordinarily be expected to attend the closing down of the majority of coal mines of this country is found on the Atlantic seaboard from Baltimore to New York and in the steel producing section from Buffalo to Cleveland.

The unexpected success of the union in cutting off non-union production in central Pennsylvania is the immediate cause of what little flurry there is in the market. Steel producers ordinarily dependent on Connellsville coal have been active the last week in buying high-volatile tonnage in eastern Kentucky and in bidding for what central Pennsylvania high-volatile coal is available.

DEMAND LIMITED; LITTLE COAL CHANGES HANDS

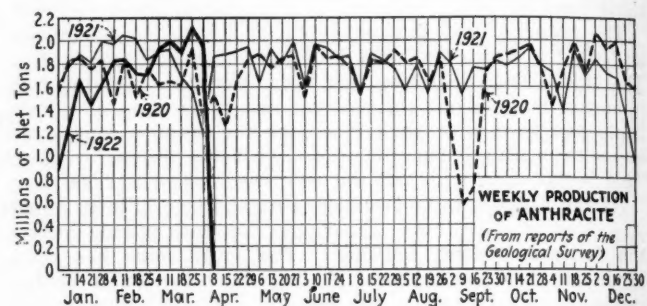
A number of important interests in New York and Philadelphia markets that had expected to have ample non-union tonnage have bought up the available free coal on track east of Altoona and Cumberland and have begun to move southern West Virginia coal in increasing quantities by boat from Hampton Roads to both New York and Philadelphia. Despite the fact that prices have stiffened in New York and "coal is coal," the actual demand is limited and comparatively little tonnage is changing hands. The price on Pennsylvania coal is now around \$3 with off-grades quoted as low as \$2.75 and some of the better grades as high as \$3.75 as an exceptional figure.

Coal Age Index of spot prices of bituminous coal on April 17 was 184, a gain of three points in one week. Prices are now where they were in the third week of January, 1922, since when they receded to the low point immediately prior to the strike.

The reverse of the picture is found in the Chicago

market and in the Northwest. "No-bills" are still heavy in southern Illinois and there is yet no scarcity of Eastern coals. This condition extends as far West as the Rocky Mountains.

Anthracite, except pea and buckwheat No. 1, is practically off the market. There is certainly no abundance



of any other sizes save these, prices for which are steady at the company circular that has been maintained for several months.

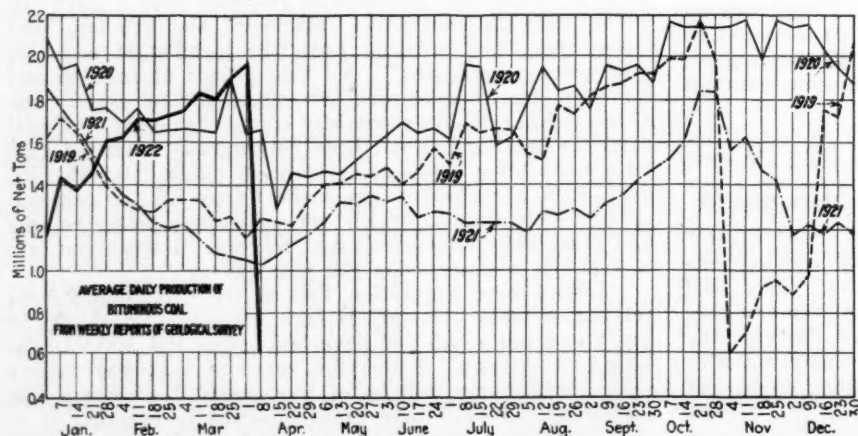
With the curtailment of beehive coke production in the Connellsville region there has been an increased demand for coal for byproduct coke plants. Beehive coke is practically off the market, and until production makes headway the iron industry will have to depend on byproduct coke for which there is ample capacity providing coal can be obtained.

BITUMINOUS

The Geological Survey raised its estimate of the production of bituminous coal from 3,500,000 to 3,784,000 net tons for the first week of the strike which was higher than that in the opening week of the 1919 strike. With reference to the second week of the strike the survey says:

"Preliminary telegraphic returns for last week (April 10-15) indicate no change in anthracite, but a slight decrease in the output of bituminous coal.

"The current production is less than the districts now at work are able to produce when the demand for coal is



Estimates of Production

(Net Tons)

BITUMINOUS		
Week ended:	1922	1921
Mar. 25 (b).....	11,448,000	6,457,000
Apr. 1 (b).....	10,463,000	5,822,000
Apr. 8 (a).....	3,784,000	6,120,000
Daily average.....	631,000	1,020,000
Calendar year.....	133,066,000	106,824,000
Daily av. cal. year.....	1,613,000	1,295,000

ANTHRACITE		
Apr. 1.....	1,896,000	1,564,000
Apr. 8 (a).....	9,000	1,865,000
Calendar year.....	21,786,000	24,382,000

COKE		
Apr. 1.....	191,000	81,000
Apr. 8 (a).....	170,000	78,000
Calendar year.....	1,978,000	2,627,000

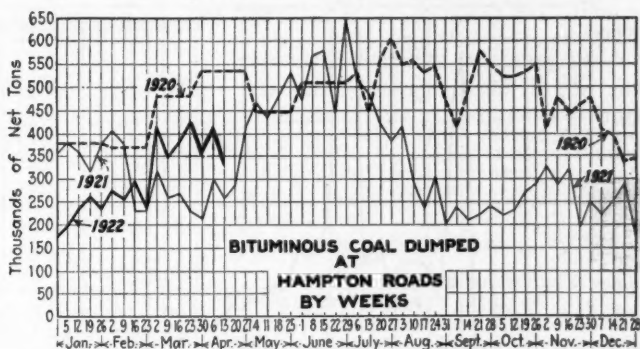
(a) Subject to revision. (b) Revised from last report.

active. It is true that a number of important non-union mines in the Connellsville coke region and in Central Pennsylvania have been closed by the strike but the existing demand is not sufficient to call out full production in those districts remaining at work. From mines in many non-union fields reports of "No market," "Dull demand," and "Unbilled coal," continue to be received. The number of loaded cars unconsigned at the mines was very large when the strike began, but the latest reports from the railroads show that it is increasing rather than decreasing."

Demand is spotted, being lively in the regions where non-union curtailment is heavier. The North Atlantic market centers show the effect of reduced receipts. The rising market here is due to the buying activity of shippers who must fill commitments predicated on non-union operations which are now shut off. The resultant scarcity of tonnage on the North Atlantic seaboard has caused a sharp price increase and has increased the flow of coal by water from Hampton Roads. Demand is coming from those who had not protected their requirements with ample stocks.

New England, Northwest and Midwest markets are still saturated with tonnage. Coal at Hampton Roads is quotably higher because of a scarcity but New England demand has diminished and delivered prices are still low because of the softened coastwise freights. Southern Illinois mines still have many "no-bills" on track, mostly domestic, and only for screenings is there any interest shown. The Mid-

west is so full of coal that there has been no flareback of the Eastern market stimulation as yet. In Cleveland there has been a strong price flurry, caused by heavy orders from steel makers who are in the unenviable position of being caught with inadequate fuel supplies just at the time



their own business was on the mend. At the Head-of-the-Lakes buyers are complacently eying the 3,000,000-ton dock carry-over. The news of early receipts of 30 coal-laden vessels to augment dock supplies is deterring consumers from increasing their orders over current requirements.

Lake dumpings for the season are approximately 8,000

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern					Market Quoted	Mar. 20, 1922	Apr. 3, 1922	Apr. 10, 1922	Apr. 17, 1922†
Pocahontas lump.....	Columbus....	\$3.05	\$2.95	\$2.85	\$2.65@	\$2.90			
Pocahontas mine run.....	Columbus....	1.85	1.85	2.15	1.85@	2.00			
Pocahontas screenings.....	Columbus....	1.15	1.15	1.35	1.30@	1.50			
Pocahontas lump.....	Chicago....	3.15	2.60	2.40	2.25@	2.75			
Pocahontas mine run.....	Chicago....	1.85	1.35	1.75**	1.60@	1.75			
Pocahontas lump.....	Cincinnati....	2.85	2.90	2.50	2.25@	2.50			
Pocahontas mine run.....	Cincinnati....	1.70	1.75	1.90	1.65@	1.75			
Pocahontas screenings.....	Cincinnati....	1.15	1.25	1.65	1.60				
*Smokeless mine run.....	Boston....	4.55	4.55	4.60	4.70@	4.80			
Clearfield mine run.....	Boston....	1.95	1.95	2.05	1.90@	2.40			
Cambria mine run.....	Boston....	2.45	2.45	2.30	2.15@	2.90			
Somerset mine run.....	Boston....	1.90	1.90	2.10	2.00@	2.50			
Pool 1 (Navy Standard).....	New York....	2.85	2.85	2.80	3.00@	3.75			
Pool 1 (Navy Standard).....	Philadelphia....	3.00	2.80	2.80	3.00@	3.25			
Pool 1 (Navy Standard).....	Baltimore....	2.65	2.70	2.70					
Pool 9 (Super. Low Vol.).....	New York....	2.30	2.25	2.40	3.00@	3.50			
Pool 9 (Super. Low Vol.).....	Philadelphia....	2.35	2.15	2.30	2.50@	3.00			
Pool 9 (Super. Low Vol.).....	Baltimore....	2.15	2.30	2.50					
Pool 10 (H. Gr. Low Vol.).....	New York....	1.90	2.00	1.95	2.50@	3.00			
Pool 10 (H. Gr. Low Vol.).....	Philadelphia....	2.10	1.90	2.00					
Pool 10 (H. Gr. Low Vol.).....	Baltimore....	2.10	2.20	2.25	2.50@	3.00			
Pool 11 (Low Vol.).....	New York....	1.70	1.80	1.75	2.50@	3.00			
Pool 11 (Low Vol.).....	Philadelphia....	1.75	1.75	1.75	2.00@	2.50			
Pool 11 (Low Vol.).....	Baltimore....	2.05	2.10	2.15	2.50@	3.00			
High-Volatile, Eastern					Market Quoted	Mar. 20, 1922	Apr. 3, 1922	Apr. 10, 1922	Apr. 17, 1922†
Pool 54-64 (Gas and St.).....	New York....	1.50	1.60	1.70	2.75@	3.00			
Pool 54-64 (Gas and St.).....	Philadelphia....	1.50	1.50	1.55	2.00@	2.25			
Pool 54-64 (Gas and St.).....	Baltimore....	1.55	1.60	1.70	2.75@	3.00			
Pittsburgh sc'd Gas.....	Pittsburgh....	2.65	2.65						
Pittsburgh mine run (St.).....	Pittsburgh....	2.00	1.85						
Pittsburgh slack (Gas).....	Pittsburgh....	1.55	1.55						
Kanawha lump.....	Columbus....	2.30	2.35	2.35	2.25@	2.40			
Kanawha mine run.....	Columbus....	1.50	1.45	1.55	1.45@	1.70			
Kanawha screenings.....	Columbus....	1.45	1.35	1.45	1.40@	1.60			
W. Va. Splint lump.....	Cincinnati....	2.15	2.15	2.00	1.75@	2.25			
W. Va. Gas lump.....	Cincinnati....	1.85	2.10	1.75	1.75				
W. Va. mine run.....	Cincinnati....	1.40	1.45	1.55	1.75@	2.00			
W. Va. screenings.....	Cincinnati....	1.30	1.30	1.40	1.60@	1.75			
Hooking lump.....	Columbus....	2.60	2.55		2.50@	2.75			
Hooking mine run.....	Columbus....	1.75	1.75		1.65@	1.90			
**Note correction from last week.									
Midwest					Market Quoted	Mar. 20, 1922	Apr. 3, 1922	Apr. 10, 1922	Apr. 17, 1922†
Franklin, Ill. lump.....	Chicago....	3.40	3.35	3.45	3.00@	3.65			
Franklin, Ill. mine run.....	Chicago....	2.50	2.40	2.75	2.50@	3.00			
Franklin, Ill. screenings.....	Chicago....	1.95	2.05	2.65	2.50@	3.00			
Central, Ill. lump.....	Chicago....	2.80	2.60	2.60					
Central, Ill. mine run.....	Chicago....	2.35	2.25	2.60					
Central, Ill. screenings.....	Chicago....	1.75	1.85	1.85					
Ind. 4th Vein lump.....	Chicago....	3.15	3.15	3.15	3.00@	3.25			
Ind. 4th Vein mine run.....	Chicago....	2.45	2.35	2.45	2.25@	2.75			
Ind. 4th Vein screenings.....	Chicago....	2.00	2.15	2.00	2.00@	2.50			
Ind. 5th Vein lump.....	Chicago....	2.80	2.60	2.60	2.50@	2.75			
Ind. 5th Vein mine run.....	Chicago....	2.20	2.20	2.60	2.50@	2.75			
Ind. 5th Vein screenings.....	Chicago....	1.60	1.75	2.20	2.25@	2.50			
Standard lump.....	St. Louis....	2.55	2.65	2.65					
Standard mine run.....	St. Louis....	1.80	1.80	1.90					
Standard screenings.....	St. Louis....	1.10	1.45	1.70					
West. Ky. lump.....	Louisville....	2.35	2.35	2.45	2.25@	2.50			
West. Ky. mine run.....	Louisville....	1.75	1.85	1.90	1.75@	2.25			
West. Ky. screenings.....	Louisville....	1.45	1.70	1.90	1.75@	2.10			
South and Southwest					Market Quoted	Mar. 20, 1922	Apr. 3, 1922	Apr. 10, 1922	Apr. 17, 1922†
Big Seam lump.....	Birmingham....	2.60	2.00	2.00	2.00				
Big Seam mine run.....	Birmingham....	1.85	1.70	1.70	1.50@	1.90			
Big Seam (washed).....	Birmingham....	1.85	1.85	1.85	1.75@	2.00			
S. E. Ky. lump.....	Louisville....	2.10	2.25	2.25	2.25				
S. E. Ky. mine run.....	Louisville....	1.60	1.55	1.70	1.75				
S. E. Ky. screenings.....	Louisville....	1.30	1.40	1.50	1.50@	1.60			
S. E. Ky. lump.....	Cincinnati....	2.10	2.10	1.90	2.00@	2.25			
S. E. Ky. mine run.....	Cincinnati....	1.45	1.40	1.60	1.75@	2.00			
S. E. Ky. screenings.....	Cincinnati....	1.25	1.30	1.45	1.50@	1.75			
Kansas lump.....	Kansas City....	5.00	4.50	4.25	4.00@	4.50			
Kansas mine run.....	Kansas City....	4.00	4.00	4.00	4.00				
Kansas screenings.....	Kansas City....	2.50	2.50	2.50	2.50				

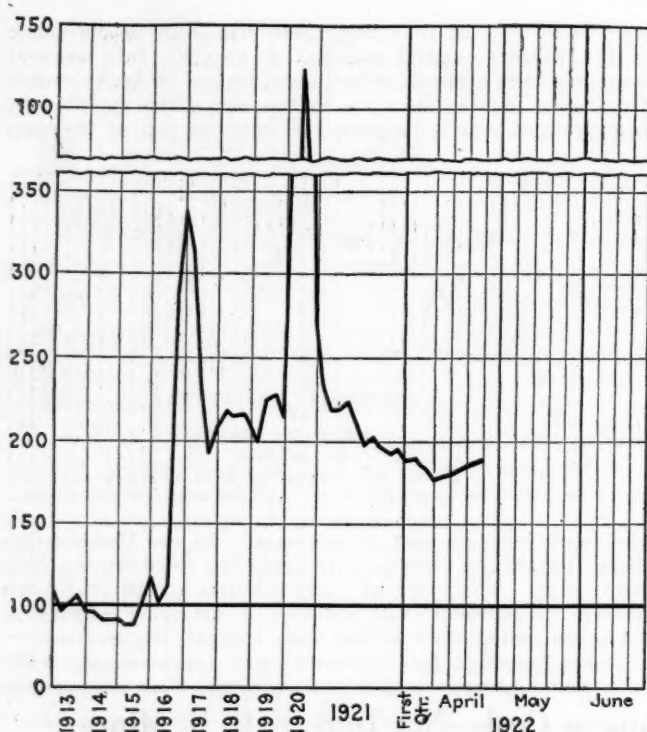
*Gross tons, f.o.b. vessel, Hampton Roads.

†Advances over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

		Market Quoted	Freight Rates	April 3, 1922		April 10, 1922		April 17, 1922†	
				Independent	Company	Independent	Company	Independent	Company
Broken.....	New York....	\$2.61			\$7.60@	\$7.75	\$7.60@	\$7.75	\$7.75
Broken.....	Philadelphia....	2.66		\$7.00@	\$7.50	7.75@	7.85	7.75@	7.85
Egg.....	New York....	2.61		7.60@	7.75	7.60@	7.75	7.75@	7.85
Egg.....	Philadelphia....	2.66		7.25@	7.75	7.25@	7.75	7.60@	7.75
Egg.....	Chicago....	5.63		7.50		6.95@	7.40	7.75	
Stove.....	New York....	2.61		7.90@	8.20	7.90@	8.10	7.90@	8.10
Stove.....	Philadelphia....	2.66		7.85@	8.15	8.05@	8.25	8.05@	8.25
Stove.....	Chicago....	5.63		7.75		7.20@	7.60	7.90@	8.10
Chestnut.....	New York....	2.61		7.90@	8.20	7.90@	8.10	7.90@	8.10
Chestnut.....	Philadelphia....	2.66		7.85@	8.15	8.05@	8.25	8.05@	8.25
Chestnut.....	Chicago....	5.63		7.75		7.20@	7.60	7.90@	8.10
Pea.....	New York....	2.47		5.00@	5.75	5.75@	6.45	6.00@	6.45
Pea.....	Philadelphia....	2.38		5.50@	6.00	6.15@	6.25	6.15@	6.25
Pea.....	Chicago....	5.63		4.10		5.60@	6.10		
Buckwheat No. 1.....	New York....	2.47		2.75@	3.50	3.50		3.00@	3.50
Buckwheat No. 1.....	Philadelphia....	2.38		2.75@	3.25	3.50		3.50	
Rice.....	New York....	2.47		2.00@	2.50	2.50		2.00@	2.50
Rice.....	Philadelphia....	2.38		2.00@	2.50	2.50		2.50	
Barley.....	New York....	2.47		1.50@	1.85	1.50@	1.85	1.50@	1.85
Barley.....	Philadelphia....	2.38		1.50@	1.75	1.50		1.50	
Birdseye.....	New York....	2.47				2.00@	2.50	2.00@	2.50

*Net tons, f.o.b. mines. †Advances over previous week shown in heavy type, declines in italics.



Coal Age Index 184, Week of April 17, 1922. Average spot price for same period, \$2.23. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh, Central Illinois, Mt. Olive and Standard prices not included in figures for last week.)

cars, as compared with 9,700 last year. The season had lagged farther behind the 1921 program until recently when the poor line demand diverted more coal to the lower ports. Vessels have been lined up to take 100,000 tons from Lake Erie ports to Buffalo, if the coal scarcity in that section grows more serious.

Hampton Roads dumpings for all accounts slumped to 342,788 net tons in the week ended April 13 as compared with 411,252 tons in the previous week. Pier tonnage is growing, however, showing that an important factor in the decreased dumpings is the lack of a ready market.

ANTHRACITE

Production of hard coal came to an abrupt stop on April 1. The strike closed every mining operation and only 9,000 net tons were loaded—172 cars, of which 27 were hold-overs and 145 filled by river dredges. Retail distribution has been very moderate so far this month and yard stocks are said to be ample for all demands that will be made during the balance of the present coal-burning season.

Producers have shipped practically all their domestic mine storage, with the exception of pea, which is moving out better. The situation is affording an opportunity for the companies to sell their heavy tonnage of pea coal which has been long all season. In the steam sizes at the mines, buckwheat is moving well but the other coals are becoming scarce.

COKE

Production of beehive coke was affected by the non-union walk-outs in the Connellsville region. The output during the week ended April 8 was 170,000 net tons, a decline of 11 per cent from the preceding week. Production in the Lower Connellsville region is greatly curtailed but an increase in the upper basin tends to offset the decline. There is no regular market, as coke buyers refuse to pay the high asking prices which have prevailed since tonnage became scarce. Where coke is needed in an emergency, furnace is going at \$5.50.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months 1921 July to Dec.	Jan. 1 to April 1, 1922 Inclusive	Week Ended Apr. 1 58.0
U. S. total.....	45.6	55.7	58.0
Non-union.....			
Alabama.....	63.5	64.6	73.8
Somerset County.....	55.5	74.9	70.1
Panhandle, W. Va.....	55.3	51.3	58.7
Westmoreland.....	54.9	58.8	73.3
Virginia.....	54.8	59.9	70.5
Harlan.....	53.3	54.8	56.5
Hazard.....	51.7	58.4	45.4
Pocahontas.....	49.8	60.0	61.5
Tug River.....	48.1	63.7	68.8
Logan.....	47.6	61.1	63.5
Cumberland-Piedmont.....	46.6	50.6	52.2
Winding Gulf.....	45.7	64.3	67.2
Kenova-Thacker.....	38.2	54.3	57.6
N. E. Kentucky.....	32.9	47.7	59.1
New River†.....	24.3	37.9	30.3
Union.....			
Oklahoma.....	63.9	59.6	54.6
Iowa.....	57.4	78.4	75.4
Ohio, north and central.....	52.6	46.6	48.5
Missouri.....	50.7	66.8	63.3
Illinois.....	44.8	54.5	56.1
Kansas.....	42.0	54.9	49.4
Indiana.....	41.4	53.8	57.0
Pittsburgh†.....	41.2	39.8	46.1
Central Pennsylvania.....	39.1	50.2	52.1
Fairmont.....	35.3	44.0	10.4
Western Kentucky.....	32.5	37.7	43.2
Pittsburgh*.....	30.4	31.9	34.6
Kanawha.....	26.0	13.0	9.5
Ohio, southern.....	22.9	24.3	22.0

* Rail and river mines combined.

† Rail mines.

‡ Union in 1921, non-union in 1922.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (a)

	Byproduct Coke (Net Tons)	Beehive Coke (Net Tons)	Total
1917 Monthly average.....	1,870,000	2,764,000	4,634,000
1918 Monthly average.....	2,166,000	2,540,000	4,706,000
1919 Monthly average.....	2,095,000	1,638,000	3,733,000
1920 Monthly average.....	2,565,000	1,748,000	4,313,000
1921 Monthly average.....	1,660,000	463,000	2,123,000
January, 1922.....	1,879,000b	496,000	2,375,000
February, 1922.....	1,795,000	549,000	2,344,000
March, 1922.....	2,137,000	732,000	2,869,000

(a) Excludes screenings and breeze. (b) Revised from last report.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

	Consumed in Byproduct Ovens (Net Tons)	Consumed in Beehive Ovens (Net Tons)	Total Coal Consumed
1917 Monthly average.....	2,625,000	4,354,000	6,979,000
1918 Monthly average.....	3,072,000	4,014,000	7,086,000
1919 Monthly average.....	2,988,000	2,478,000	5,466,000
1920 Monthly average.....	3,684,000	2,665,000	6,349,000
1921 Monthly average.....	2,385,000a	731,000a	3,116,000
January, 1922.....	2,699,000ab	782,000a	3,481,000
February, 1922.....	2,579,000a	866,000a	3,445,000
March, 1922.....	3,071,000a	1,155,000a	4,226,000

(a) Assuming a yield in merchantable coke 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens. (b) Revised from last report.

Winding Gulf Mine Workers Earn Adequate Living Under Reduced Wage Scale

EVEN under a lower wage scale, such as that which prevails in the Winding Gulf region of West Virginia, miners appear to be making a comfortable living, as shown in the earnings of miners at the Glen White plant of the E. E. White Coal Co. during the first two weeks of March. In that period earnings for the various classes of mine workers averaged as follows:

AVERAGE EARNINGS OF ALL LABOR AT GLEN WHITE MINE, FIRST HALF OF MARCH, 1922

INSIDE LABOR	OUTSIDE LABOR
Machine cutting—contract... \$158.00	Hoisting engineer..... \$80.00
Motormen..... 78.39	Tippelmen..... 53.90
Brakemen..... 58.42	Slate pickers..... 45.50
Bratticemen..... 69.30	Car loaders..... 60.63
Trackmen..... 70.20	Blacksmith..... 75.00
Timbermen..... 58.50	Car repairmen..... 71.30
Slatemen..... 55.44	Carpenters..... 64.40
Pumpmen..... 78.39	Ashmen..... 64.00
Wiremen..... 80.73	Firemen..... 74.80
Cagers..... 64.40	Plant repairmen..... 75.00

Working 192 days in 1921, 242 miners at Glen White had an average yearly income of \$1,997.95 and 247 Stotesbury miners working 200 days had an average yearly income of \$1,871.84.

Foreign Market And Export News

Lack of Adequate Dock Facilities Hampers British Export Trade

While demands for Admiralty and Monmouthshire classes of large remain strong, other descriptions of Welsh coals have lately shown irregularity. This is partly due to the engineering and other troubles having limited the inland call, especially for manufacturing descriptions, which has thrown this on the export market in heavier quantities. The lack of adequate shipment facilities at the docks, because of the limited working hours, is a bar to the expansion of exports, and for this reason pits are being closed in districts producing an excess of the classes not directly in demand. For this reason there is a wide difference in the conditions prevailing in various areas.

Inquiries continue to circulate for supplies of coal for shipment to Canada and elsewhere, in view of the strike in the United States and Nova Scotia. Most of these, however, are of a tentative character. Ability to export much increased quantities, through congested docks, is lacking, and must remain an important factor. Some bunker orders have been placed, but reliable information is difficult to obtain. While big shipments are being made to India, South America, the Italian and French markets appear to have relaxed again.

Coal Paragraphs from Foreign Lands

INDIA—The bunker coal market at Bombay is firm and the fuel oil market steady.

GERMANY—Production of coal in the Ruhr region during the week ended April 1 was 1,930,000 metric tons, according to a cable to *Coal Age*. The previous week's output was 1,975,000 tons.

ITALY—The price of Cardiff steam first is quoted at 40s. 9d., according to a cable to *Coal Age*, unchanged from the previous week. No American coal is quoted on the Genoa market.

HOLLAND—The latest quotation on the Rotterdam coal market for British coal per gross ton is 13.50 gulden and 23s., c.i.f.

BELGIUM—The coal industry is becoming nervous. The demand remains

apathetic owing to the increasing scarcity of orders and the uncertainty as to reductions in wages. The workers consider that owners should bear a part of the burden by reducing their profits. Meanwhile the weakness of industrial coals persists, while domestic descriptions, owing to the bad weather, are rather more active.

SPAIN—There is very little business in Asturian coals at Barcelona owing to the prices being almost on a par with those for British coal. The quotations are: Large, 82 pesetas and small, 60@65 pesetas.

The payment of the bounty of five pesetas per ton on Spanish coal leaving Spanish ports for coastal trading is to be prolonged for another three months.

VENEZUELA—The bunkering trade in the West Indies is beginning to feel the effect of the coal mine development at Guanta. These mines were opened in 1907 and apparently are being successfully developed. While the coal is highly volatile, it has been used successfully on the Royal Dutch Mail boats and is regarded as a fairly good coal.

Export Clearances, Week Ended April 13, 1922

FROM HAMPTON ROADS:	
For Atlantic Islands:	Tons
Dan. S.S. Niels R. Finsen, for Fort de France	2,758
For Brazil:	
Nor. S.S. Talabat, for Rio de Janeiro	9,993
For Chile:	
Nor. S.S. Johanne Sybwad for Punta Arenas	2,182
For Cuba:	
Nor. S.S. Marshall, for Havana	2,973
Am. S.S. Montoso, for San Juan	2,612
For Mexico:	
Br. S.S. Avon Queen, for Vera Cruz	1,029
FROM PHILADELPHIA	
For Atlantic Islands:	
Fr. Schr. Eugene McKay, for Martinique	

More Foreign Coal for San Francisco

During the last six months, heavy coal shipments to the United States, particularly the Pacific Coast, started from Australia and Japan. A limited amount came to San Francisco from England. An unusually large amount of foreign coal is now on its way.

In 1920 the total amount of coal landed in San Francisco from all foreign countries was 3,130 tons, none of which

was from Japan. In the last three months of 1921 there were 26,750 tons of Japanese coal, 20,405 tons of English coal and 27,420 tons of Australian coal landed in San Francisco.

At present there are four coal-laden steamers, three from Australia and one from England, due in San Francisco.

Better Demand at Hampton Roads

Cessation of mining at certain non-union operations greatly affected the dumpings at the piers during the week ended April 13. Then too, non-union tonnage is in better call throughout the country which also tended to reduce business here. Dumpings were 342,788 net tons as compared with 411,252 in the week preceding.

Prices show a little more stimulation, the largest increase being on pools, 5, 6 and 7 which are now quoted \$4.65@ \$4.80, f.o.b. piers. Pool 1 is quoted up to \$4.80. Coastwise movement is diminishing but this lack of demand is more than offset by a decrease in the supply, while softening marine freights to New England are keeping delivered prices on an even keel.

Hampton Roads Pier Situation

		Week Ended	
		April 6	April 13
N. & W. Piers, Lamberts Point:			
Cars on hand	1,849	2,156	
Tons on hand	99,448	113,665	
Tons dumped	152,501	171,267	
Tonnage waiting	25,000	24,000	
Virginian Ry. Piers, Sewalls Point:			
Cars on hand	1,397	1,370	
Tons on hand	69,850	77,850	
Tons dumped	120,571	86,867	
Tonnage waiting	12,000	14,000	
C. & O. Piers, Newport News:			
Cars on hand	1,291	1,217	
Tons on hand	64,550	60,850	
Tons dumped	94,118	47,927	
Tonnage waiting	1,970	2,200	

Pier and Bunker Prices, Gross Tons

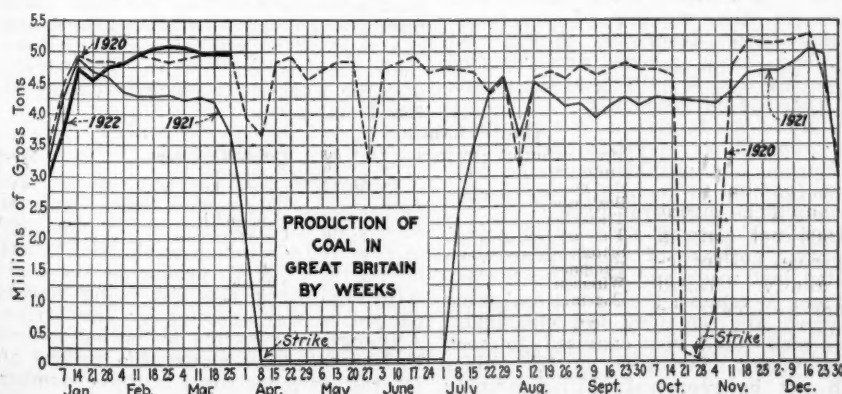
		PIERS	
		April 8	April 15†
Pool 9, New York	\$5.40@5.80	\$6.25@6.50	
Pool 10, New York	5.20@ 5.40	5.80@ 6.10	
Pool 9, Philadelphia	5.40@ 5.70	5.80@ 6.00	
Pool 10, Philadelphia	5.00@ 5.40	5.50@ 5.80	
Pool 71, Philadelphia	5.65@ 5.90	6.00@ 6.25	
Pool 1, Hamp. Rds.	4.50@ 4.70	4.70@ 4.80	
Pools 5-6-7 Hamp. Rds.	4.25	4.65@ 4.80	
Pool 2, Hamp. Rds.	4.45@ 4.50	4.50@ 4.60	
		BUNKERS	
Pool 9, New York	\$5.75@6.25	\$6.40@6.65	
Pool 10, New York	5.55@ 5.80	5.90@ 6.30	
Pool 9, Philadelphia	5.60@ 5.90	5.85@ 6.30	
Pool 10, Philadelphia	5.30@ 5.60	5.80@ 6.20	
Pool 1, Hamp. Rds.	4.75	4.90	
Pool 2, Hamp. Rds.	4.55	4.75	
Welsh, Gibraltar	40s. 6d. f.o.b.	40s. 6d. f.o.b.	
Welsh, Rio de Janeiro	55s. f.o.b.	55s. f.o.b.	
Welsh, Liabon	40s. f.o.b.	40s. f.o.b.	
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.	
Welsh, Genoa	42s. t.i.b.	42s. t.i.b.	
Welsh, Messina	38s. f.o.b.	38s. f.o.b.	
Welsh, Algiers	38s. 6d. f.o.b.	38s. 6d. f.o.b.	
Welsh, Pernambuco	62s. 6d. f.o.b.	62s. 6d. f.o.b.	
Welsh, Bahia	62s. 6d. f.o.b.	62s. 6d. f.o.b.	
Welsh, Madeira	38s. f.a.s.	38s. f.a.s.	
Welsh, Teneriffe	38s. f.a.s.	38s. f.a.s.	
Welsh, Malta	42s. f.o.b.	42s. f.o.b.	
Welsh, Las Palmas	40s. f.a.s.	40s. f.a.s.	
Welsh, Naples	38s. f.o.b.	38s. f.o.b.	
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.	
Welsh, Singapore	55s. f.o.b.	55s. f.o.b.	
Port Said	46s. 6d. f.o.b.	46s. 6d. f.o.b.	
Alexandria	45s.	45s.	
Bombay	38 rupees	38 rupees	
Capetown	39s.	39s.	

Current Quotations British Coal f.o.b.

Port, Gross Tons

		Foreign Quotations by Cable to Coal Age	
		April 8	April 15†
Cardiff		27s. 9d. @ 28s. 3d.	28s. @ 28s. 6d.
Admiralty, Large		19s. @ 19s. 6d.	19s. 6d. @ 20s.
Steam, Smalls			
Newcastle			
Best Steams		23s. 9d. @ 24s. 3d.	24s.
Best Gas		24s. @ 25s.	24s. @ 24s. 6d.
Best Bunkers		23s. 6d.	23s. 8d.

†Advances over previous week shown in heavy type; declines in italics.



North Atlantic

Quotations Up; Due More to Scarcity Than Increased Call

Non-Union Mine Developments Strengthening Factor—Consumers Who Built Up Reserves Not in Market—Those Relying on Non-Union Tonnage Must Pay High.

DEVELOPMENTS in the non-union mine fields have strengthened prices. Quotations are much higher than on April 1, but more because of the scarcity than increased demand. A large tonnage has been bought by big shippers to cover contract orders which were based on non-union operations since closed down.

Consumers who safeguarded their reserve supplies are out of the market, but those who planned to buy non-union spot coal during the strike are paying high for this tonnage. The supply of coal is uncertain, as mine resumption cause a heavy volume of shipments one day and an insufficient amount the next. The export movement from Baltimore increased during the first ten days of April.

PHILADELPHIA

The situation is growing uncertain, as no shipper can tell twelve hours in advance whether he will have coal or not. Prices also move in an uneven manner, as some non-union producer who has probably lost a few days, quickly effects a resumption and then has more coal than he can immediately handle. In other cases the demand is so strong, that the same shipper is enabled to get a greatly increased price.

Despite whatever inroads have been made in non-union sections the producers are satisfied to fight the issue out along the present plan of trying to produce as much coal as possible with non-union labor.

Considerable stir was made in the market recently by good buying by the steel interests, and the shippers are mostly quoting on spot coal subject to prior sale. For the most part the consumer is still uninterested, and it is altogether possible for the market to drift along six weeks yet with little or no change in present conditions.

There is some little activity at Tide. As much of this business is done on a contract basis the shippers are no doubt making extra efforts to meet their obligations, as a number closed business predicated on their ability to operate non-union mines.

NEW YORK

Developments in the non-union mines have tended to strengthen the situation considerably. Some of the larger producers who operate both union and

non-union mines and who have large contracts to fill, have bought heavily, creating a demand which resulted in a stiffening of quotations. The steel companies also were reported as heavy buyers.

The full effect of the closing down of many non-union mines cannot be determined until after the Easter holidays. Under normal conditions the miners would have remained at home from Thursday before Good Friday until the following Tuesday.

There is a heavy demand by the line trade and quotations are slightly stronger than on the Tidewater basis. At the various Tidewater piers there were reported on April 13 between 1,800 and 1,900 cars, the majority of which was coal from along the Baltimore & Ohio and New York Central lines. Demand was not strong and while there were many inquiries not every inquiry resulted in an order.

Southern coals are still being brought here. As indicated in another column the gas and electric companies in Greater New York were in good condition to withstand the strike for several weeks to come.

BALTIMORE

From the mining regions that supply Baltimore, come reports of further closing in the non-union fields. The Easter holidays undoubtedly have contributed to the decline in movement. For the past two or three days it has been almost impossible to pick up soft coal. Practically no Pool 9 is to be had at this writing, and this also applies to Pool 10. Some little Pool 11 has been on the market at prices ranging \$2.50@ \$3. An inferior grade of gas mine run is also offered from West Virginia, but the price asked, \$2.50@ \$2.75, has not been attractive to buyers.

It is rather remarkable that the demand has not been accelerated, and consumers seem to be traveling on existing stocks without particular worry as to the near future.

The export situation for the first ten days of April showed improvement over the same period of March and more than the total of the entire month of February. Three vessels cleared, two for Egypt and one for Cuba, for a total of over 14,000 tons cargo and 1,500 tons in bunkers.

CENTRAL PENNSYLVANIA

The U.M.W. have made considerable gains in the number of non-union miners taken from the mines. At Windber, 2,500 miners are reported out, a few men remaining at the mines, but there is no production.

Many of the foreign miners are making preparations to go to their homes in Europe and should the strike continue for another month, it is expected there will be a general exodus.

In the Foustwell field of Somerset County, notices of shutdown were posted last week and the miners were ordered to remove their tools and mine foremen are removing the machinery. The men have been advised to seek employment elsewhere as the mines will not be reopened until non-union miners ask for the opening.

FAIRMONT

Although no coal was being produced during the first week of the strike at any union mine, production was continued at approximately 65 non-union mines and the utmost effort to force a shutdown at that class of mines failed. Spot demand is beginning to show signs of revival and Eastern buyers were offering as much as \$2.50 a ton for mine run. Some railroads are reported to be in the market for more coal. Railroad fuel requirements are necessarily low, however, in view of the light movement of tonnage.

UPPER POTOMAC

In the Georges Creek region the suspension is almost complete. In the Upper Potomac, mines were operating to some extent during the first week of the strike, there being from 16 to 20 in operation, although running time was restricted owing to a poor market. Where miners show a disposition to work, they are being given an opportunity to do so although production is not profitable.

South

BIRMINGHAM

Increasing activity among the iron-makers is giving aid to the production and movement at a time when the shortage in demand from commercial and domestic sources would prove very prejudicial to the employment situation in the district. The output is now on a basis of about 325,000 net tons per week, which is close to normal, due principally to the requirements of the furnace companies and to the stocking which has been done by the railroads, the latter source of disposition being the only direct benefit so far accruing from the strike.

Commercial demand is only slightly improved. Some contracts are being made to replace those expiring, but there is not any great amount of business in the way of new agreements. The spot trade is still restricted, although the tone of the market as a whole is better.

Some domestic contracts are being made, but there is an inclination on the part of dealers to have deliveries deferred beyond April. No changes of note have been made in prices of steam and domestic.

The leading coal-carrying lines have such a large percentage of their equipment under load with company fuel that operations served by them have been short of cars to some extent and the roads have not been able to take their usual weekly quota. The supply of mine workers is much in excess of the demand.

VIRGINIA

Production has reached the highest figure since December, 1920, being in excess of 70 per cent or at the rate of over 150,000 tons a week, with mines on the C. C. & O. producing the best. Virginia mines are not being handicapped in any manner by the strike. Although spot buying is limited, nevertheless there are signs of a revival of interest as reflected in a larger number of inquiries.

Anthracite

Retail Sales Moderate, but Yards Show Effect of Strike

With Larger Sizes Nearly Cleaned Up, Companies Find Market Better for Storage Pea Coal—Buckwheat Only Steam Size Moving Well, Others Becoming Scarce.

THERE is only moderate buying at retail, but yard stocks are beginning to show the effect of the mine suspension. The company producers are finding a better market for their storage pea coal, as the larger sizes are nearly cleaned up. This condition affords them an opportunity to work off the heavy volume of pea which had accumulated prior to the strike. In the steam market only the buckwheat movement from mine storage is good, as the other sizes are becoming scarce.

Many dealers are attempting to place orders now for delivery after the strike, with the idea of obtaining preference in shipments. Producers, however, are not inclined to take on firm business at present.

NEW YORK

So far there has not been any heavy demand for coal and even if there had been some of the companies have nothing to sell larger than pea coal. There is said to be some independent domestic coals at Tidewater but even these are not in demand. Line demand is much stronger but most producers have little to offer as most of their product was shipped to Tidewater.

Retail stocks, particularly in the smaller towns in the Metropolitan district, are being depleted and it is expected the dealers will soon come forward for more coal only to find that the only domestic size available will be pea coal. In this way the producers with heavy stocks of pea on hand expect to clean up their storage piles.

While quotations as high as \$8.50 were heard for independent stove and chestnut coals it was admitted that the average selling price for these was hardly above \$8.25, with considerable going at company circular. Some washery chestnut was offered at \$7.

PHILADELPHIA

Remarkably warm weather took all snap out of the retail market during the past week. However, even what little coal has been taken since the first of April has made a considerable impression upon the visible yard stocks, and those dealers who had thought the suspension might not last over a month are questioning whether they adopted the right policy in going into April with moderate supplies.

Producing companies have practically cleaned up all storage of family sizes, except pea, and are unable to accommo-

date the retailers. This has created considerable business for the companies on pea coal.

Numerous retailers are already endeavoring to have their shippers take orders from them for delivery when the strike is ended. Without absolutely declining the orders some companies are acknowledging the receipt, promising to give definite advice as to when they will be ready for shipments. Some independents have also sounded their customers as to the probable tonnage they might need on the old allotment basis, and have received many responses from their customers.

BALTIMORE

The hard coal situation is naturally at a standstill. The local demand is very light and is being supplied from stocks on hand and everyone is in a waiting frame of mind as to possible storage against next winter.

ANTHRACITE FIELDS

So far there has been no trouble of any kind in the anthracite fields. The pay the miners have just received is the largest in some time. It is really larger than the amount mined in the last two weeks of March would indicate as a good deal of coal was left in the mine pockets to supply local trade.

In the vicinity of Wilkes-Barre the men are expecting a long-drawn strike, but in Scranton the reverse seems to be the case and the men believe that the suspension will only last a few weeks.

In case the strike is prolonged it is possible that it will be very much more serious than it was in 1902. There are many more foreigners in the field now than there were then and the radical element is greater. Since the strike commenced a large amount of I. W. W. circulars have been distributed.

BOSTON

Shipments of odd lots are still being made from New York piers, but the volume is by no means large. It is a striking fact that notwithstanding the suspension which is now in its third week there is only scattering inquiry for domestic sizes. Retail dealers have reserves varying from six weeks to three months.

Retail demand has fallen off sharply since mild weather set in. One large distributor has lately been making less than 30 per cent of the retail sales that were current early in the month.

Prices are unchanged, except that one of the originating companies has been bold enough to pass on to the buyer a 50c. charge for picking coal up from storage.

BUFFALO

Some companies are selling coal out of storage supplies, but as a rule the trade is flat. Colder weather has stimulated the buying but little, as the majority of dealers have plenty on hand to last them for weeks. Many Canadian dealers' stocks will last through May.

The first anthracite cargo left here during last week, but only two have been loaded so far in advance of the

navigable season. From present appearances April will see a smaller Lake trade than for many years. Leading shippers say they may have no coal for the Lake trade until the strike is settled.

Coke

CONNELLSVILLE

In the first week the striking in the general coke region quite exceeded any expectations of the operators. In the second week there was a further decrease in operations in the lower Connellsville, with some striking in the upper Connellsville or Greensburg basin.

No particular efforts were made by operators last week to resist the strike tendency, the Easter holidays furnishing an unpropitious time since the disposition to work is always light then. Independent operators are disposed to let the Frick company take the lead in attempting to get works in operation again, and active efforts are now expected.

There has been nothing like a regular market for furnace coke. There have been some small offerings, but at fancy prices, which the furnaces would not pay except in an occasional emergency.

The *Courier* reports production in the Connellsville and lower Connellsville region during the week ended April 8 at 101,530 tons by the furnace ovens, and 32,890 tons by the merchant ovens, a total of 134,420 tons, a decrease of 15,540 tons. Production by merchant and furnace ovens combined is reported at 102,530 tons in Connellsville, an increase of 14,580 tons, and 31,890 tons in the lower Connellsville, a decrease of 30,120 tons.

UNIONTOWN

Opposing factions in the effort to unionize the Connellsville coke region virtually admit that upon the outcome of the work by organizers during the Easter holidays will depend the success or failure of the movement.

There were very little gains made during last week by union organizers, with the exception of the walkout Monday at the miners centering Uniontown. Some gains have been made in the Star Junction district. The Frick mines centering at Connellsville have consistently resisted efforts at unionization despite the fact that all organizers have concentrated a drive on workmen there.

Were there any loose tonnage either of coal or coke the market might ascend to new price levels. But there is very little to be had of either and prices therefore are secondary. Nominal quotations for furnace coke may be placed at \$5.50, foundry a dollar higher and coal, all grades, at \$2.50. No effort now is being made to distinguish grades where price is concerned. When a new market figure is struck all grades command the same figure.

BUFFALO

Producers are about out of the market, owing to the difficulty experienced in getting coal. There will be little coke offering in this market before May 1, perhaps later. Quotations made in the past few days have been more or less nominal.

Chicago and Midwest

West Enviously Watches Trade Flurry in East

Region Is Full of Coal and Buyers Let It Severely Alone—Screenings Show Only Signs of Life—Prices Stiffen—Sales Few and Small.

THE coal trade of the Middle West is spending most of its time gazing eastward and wishing that some of the demand that appears to have sprung up there would develop here. Certainly there is as little business west of Ohio for coal men nowadays as there could be without a complete collapse of Western industry. After most of the selling agencies in Chicago had withdrawn their field men hopelessly, a number of western Kentucky producers scoured the country in a mopping-up campaign for business. It netted them next to nothing. The region has a good deal of Eastern coal in it and there remain on track in Illinois a few thousand cars of sized fuel but the demand simply isn't here. Prices are uncertain on prepared coal and remain firm on screenings because there is hardly any to be had.

Naturally the principal interest in the Midwest centers on non-union coal from the East. It was freely offered at the end of the week without finding much of a market even though reports had it that the East would soon absorb so much that the West might be caught short some fine morning. Most of this coal is mine run. Such prepared sizes as are actually sold and delivered sometimes look strangely degraded when they arrive. Spot prices on mine run range from \$1.60 up to about \$1.75 though an effort is made here and there to boost the level to \$1.90. Contracts can be written on this coal at \$1.75. Not many have been signed.

The whole region is full of coal. Storage piles are only just beginning to show the effects of invasion and except for a slight awakening of interest in screenings and steam coals a week ago, there has been no market to speak of. Screenings have strengthened in price since last week and mine run has followed it upward. Southern Illinois screenings are up to \$2.50@\$. Indiana Fourth Vein quotations are \$2@ \$2.50 and Fifth Vein \$2.25@ \$2.50. The supply is short indeed. Other quotations are shown in the Weekly Review.

The strike progresses without causing any labor disturbance in the Midwest. Feeling grows tenser week by week but there have been no outbreaks in the fields. Nothing has occurred here that might be called a definite step toward a settlement between operators and miners.

CHICAGO

Those coal concerns in Chicago which do not operate any Kentucky or Eastern mines are doing no business worthy of the name, for the Chicago market is flat. Screenings sell fairly well when there are any to be had, which is seldom and in small quantity, and they bring a heightening price because only a few cars are left in either Indiana or Illinois.

Northern and central Illinois is practically cleared of all carry-over, but the Southern counties still have about 6,000 cars on track and three or four good-sized storage piles at mines. Practically all of this is prepared sizes which are used to patch out customers' supplies thus keeping up a semblance of trade connection. Kentucky and smokeless coals are offered in great quantity here but there are few buyers.

INDIANAPOLIS

Prices of every variety of coal sold by retailers in Indianapolis with the exception of Linton, No. 4 Indiana lump, anthracite and coke, have declined 25c. to 75c. a ton. These are the usual spring reductions. It is doubtful how long they will remain in effect, however.

The new prices are as follows: Linton No. 4 egg, \$5.75; Linton No. 4 mine run, \$5.25; southern Illinois egg, \$7.50; southern Illinois 6-in. lump, \$7.50; Kanawha lump, \$7.50; eastern Kentucky lump, \$7.50; Hocking Valley, \$7.50; Pocahontas mine run, \$7.25; Pocahontas lump, \$8.50; Pocahontas shoveled lump, \$8.

According to Indianapolis operators, it will be a question of only a short time before steam coal supplies on sidings and at mines will be exhausted. Thus far there have been no increases in prices. No urgent demand is expected for another month. Indiana operators believe the situation will then become graver each week. Indiana went into the strike with a sixty-day coal supply.

SOUTHERN ILLINOIS

Quietness prevails over the entire southern Illinois field. At one or two places in the Williamson-Franklin field the mine foremen and bosses have quit and clerks and salesmen from the general offices have been put on to man the pumps and keep steam up and do general police duty. No disaster of any kind has been reported so far in any of the southern Illinois fields.

Some destitution still prevails in Williamson and Franklin among the miners' families. The miners seem to be confident everywhere that the Government is going to sooner or later step in.

Railroad tonnage remains on track at many mines and at others there is a fairly good supply of screened sizes, but no screenings.

LOUISVILLE

Reports received from jobbers and brokers show that demand here is quiet for all grades of coal, and that many mines are idle for lack of business.

Heavy tonnages on board cars are being reduced slowly, and operators have no inclination toward increasing unsold stocks. Jobbers and operators are hunting for new markets, but with no more success than they had last week.

The strike in Kentucky is a negligible factor, as with the exception of a very few mines in Southeastern Kentucky, none of the fields are shut down.

One report states that about 20 per cent of the mines in the Harlan district are down, and about 75 per cent in Bell, Whitley and Knox fields where the union is strongest. However estimators of these percentages are not giving proper consideration to lack of demand, which has more mines down than labor troubles, according to well-posted coal men.

Local coal men think that industrial consumers will start buying coal the last of the month and prices may advance then.

ST. LOUIS

The dealers' yards still have plenty of domestic coal and there is practically no demand in city or country. Steam in dealers' hands will be good for at least 60 days.

Locally carload steam finds no buyers excepting for screenings if there are any on the market. Most plants have pretty fair storage supplies but steam coal other than screenings is at a standstill. Here and there some operator tries to get a little bit better price and from now on this will likely continue for the feeling prevails that coal now on track will bring better prices later.

WESTERN KENTUCKY

Demand for western Kentucky coal continues slow, operators, jobbers and brokers reporting that the tonnage is available at approximately the same prices as were in effect on April 1 or late March but that buyers are filled up, anticipating lower prices if the strike is broken, and are not showing any interest.

On April 8, it was reported that there were over 800 cars of coal on track ready to move from western Kentucky. Very few mines have been operating, and these but part time, as a result of the very slow demand, report after report stating "down—no business."

Producers are endeavoring to secure a mine-run basis of around \$2.10, as with the peak prices of labor still in effect, production is costing something over \$2 a ton, including selling expense.

Canada

TORONTO

The strike has so far had practically no effect here. Neither domestic nor industrial consumers appear at all anxious to place orders. Dealers note some increase in inquiries for bituminous but actual business continues light. April receipts have been confined to a little bituminous. Quotations are as follows:

Retail	
Anthracite, egg, stove and nut.	\$15.50
Pea	14.00
Bituminous steam	9.25@9.75
Domestic lump	11.25
Cannel	16.00
Wholesale, f.o.b. cars at destination	
3-in. lump	7.00@7.75
Slack	6.00@6.75

Northwest

Trade Remains Dormant But Hopes Are Rising

Anticipated Drop in Freight Rates May Awaken Some Inland Demand as April Ends—Dock Stocks Still Heavy and Big Cargoes Will Arrive Soon.

COAL business generally is dull throughout the Northwest region. Buyers still show no inclination to worry over the strike. Some effort on the part of dock men with large storage piles to unload has had a slight softening effect on certain coals but not enough business has been done to sink this effect in deeply.

The carryover of April 1 has not been reduced much. Something less than a half million tons of coal from the Eastern fields is now definitely on the way toward the Head-of-the-Lakes. It is expected to appear within a week or so, now that the ice is about out. Prices on larger sizes are in a slump while screenings have been holding firm. Although there is little demand anywhere, some shipments Inland are expected to start about the end of the month when a freight rate reduction takes effect.

MINNEAPOLIS

At this time there is hardly any business being placed, except for such coal as is likely to be required before long. No one is at all alarmed over the situation, least of all the consumer, who seems to be well pleased with his prospects as to coal prices.

Buyers hold confidently to the faith that there is to be a drop in freights and another in production costs. And the coal men as a rule are inclined to agree, though the first is contingent upon matters outside the coal trade's control and the second is, contingent upon the readjustment of wage scales to a lower basis.

Coal men are sitting very tight and decline to urge anything. If buyers play their own judgment, the coal trade will gladly book and fill the order. But where advice on the subject is sought, the coal men are inclined to suggest that they expect lower prices for coal as a result of the negotiations which will follow the strike.

The docks have an ample supply, and the retail yards are reasonably filled. There is ample coal on hand in the Northwest to run at least 25 per cent of a season. This applies to both soft coal and hard. So far as the demand for consumption is concerned, the supply of hard coal would last for six months. But of course refilling of the docks should be under way before that length of time is up, or there will be a shortage next winter. There is more

commercial and industrial demand through the spring and summer, but with better than 3,000,000 tons of soft coal for commercial purposes on the docks, there is easily enough for 90 days or more.

In addition to the stores on the docks, it appears that the mines have not exhausted their stocks above ground, at a number of all-rail mine sources. Some of this store is still moving to the Northwest from time to time.

DULUTH

Shipments for March from the Head-of-the-Lakes docks showed a decided increase over those of the month before and were far in excess of shipments of March a year ago. Official figures just released show that 22,249 cars of coal went out from the docks here last month, and only 7,850 were shipped during March, 1921. Shipments for February of this year amounted to 18,260 cars.

This run of shipments was due to dealers and public utilities stocking up before the coal strike. However shipments have been off ever since April 1 and there is little sign of a pick-up. Confidence that the strike will be of short duration or that there is sufficient coal on docks is steadily increasing.

A survey completed this week shows 3,000,000 tons of bituminous and 500,-

000 tons of anthracite on docks. Additional reports from lower ports have it that between 30 and 40 cargoes are loaded there and waiting for the opening of navigation here. The opening of navigation will not be long delayed now. This week for the first time the end of the sheet of ice which covers Lake Superior has been visible from the heights of Duluth. The harbor is nearly clear of ice.

A downward revision in prices is noticeable. Bituminous has dropped 50c. to \$6.50 for lump and \$6 for run of pile. Screenings are firm and stiffening at \$4.50@4.75. This is caused by the fear that a possible settling of the strike would find many docks with large stocks on hand and no contracts.

A reduction in freight of possibly \$1 a ton from mines to dock, anticipated for next month, is holding the attention of buyers generally.

MILWAUKEE

Coal business is extremely quiet in Milwaukee. Rail receipts from Illinois and Indiana and of Pocahontas from West Virginia, are fairly liberal. This plus the fact that ten large cargoes at Lake Erie ports, destined for Milwaukee, await the opening of Mackinaw, makes consumers confident of plentiful supply.

Prices remain unchanged. Contrary to April custom big buyers are waiting for lower prices instead of contracting now. The State Department of Markets predicts a reduction in prices will be made at interior points because of the reduced freight rates from Wisconsin lake ports, which will go into effect on April 28.

New England

Trade Continues Very Dull Despite Supply Conditions

Smokeless Firmer at Hampton Roads—Softness of Marine Freights Offsets Rise in Pier Prices—Central Pennsylvania Grades Scarce—Buyers Still Indifferent.

A TIGHTENING at the sources of supply has not yet affected New England markets, and business continues very dull. Smokeless coals have firmed up at Hampton Roads but demand has not increased and the marine freight softness about offsets the higher pier prices. Central Pennsylvania grades are scarce but buyers are unmoved in the face of higher prices, which are largely nominal.

The textile strike continues to keep down current industrial fuel needs. Reserves are good in most instances and the old feeling of indifference still prevails among coal buyers.

At Hampton Roads the market for the past week has grown steadily firmer. Coal that was offering freely

ten days ago at \$4.60 has been quoted as high as \$4.80 and it is quite likely there will be a further lift in quotations. Movement coastwise has somewhat diminished, but this is more than offset by a noticeable decrease in supply.

The New River district seems much more affected by the suspension than the trade supposed would be the case. The fact that non-union districts in central Pennsylvania have been obliged to suspend so generally is likely before long to have an effect upon the general market.

For Inland distribution at points like Boston, Providence, and Portland prices are as yet unchanged. There is every reason to expect, however, that quotations will harden during the next few days. Marine freights have their bearing on these prices, however, and there is now so little inquiry for spot barges and vessels that a somewhat reduced rate may offset advances f.o.b. Hampton Roads.

There seems an utter dearth of Pennsylvania grades offering in this territory. Movement through the Hudson River gateways has dropped off, due to the suspension, but most of the small tonnage now coming through is on fuel contracts with the railroads. The few quotations that are heard on Pennsylvania grades are only nominal, for only relatively few operators are in position to make spot shipments.

Eastern Inland

Inquiries Increase, Prices Rise, Buyers' Market Wanes

Steel Plant Buying Causes Flurry—Many Mills Relied on Non-Union Supply, Some of Which Is Unavailable—Those Lacking Reserves Face Mounting Prices.

THE buyers' market seems to be passing, temporarily at least. Inquiries are increasing and prices are rising as a result of the non-union uneasiness. Buying by steel plants has mounted to a flurry, as the mills had not stored much tonnage, relying on non-union supply, some of which is not available. Most industrial consumers are out of the market, using their reserves, but those who are not so fortunate are faced with mounting quotations.

Lake business is progressing and much non-union tonnage is being loaded. About 400,000 tons have been dumped so far this season, as compared with 9,700 tons at this time last year.

CLEVELAND

The spread of the strike into the non-union fields has been met with sharp reaction upon prices and demand in this district. The heaviest demand is coming from the steel mills.

Outside of the steel mills the fuel situation seems to be less of immediate concern. Stocks are fairly large and there is still considerable coal on hand among dealers for sale. No acute shortage is likely to develop for a few weeks. If the non-union miners do not resume production soon, the situation will take a serious turn. Many steel mills will not only be compelled to shut down, but their customers will begin to cancel shipping orders, because coal will be scarce for general manufacturing purposes.

In the meantime prices are pointing upward. Loading of vessels at the lower docks is proceeding. For the season to date nearly 8,000 cars have been dumped against about 9,700 cars in the same period one year ago. Tonnage to take 100,000 tons of coal from lower ports to Buffalo has been lined up.

Receipts of bituminous coal at Cleveland during the week ended April 8 do not reveal any rush for coal, total arrivals being 200 cars under the preceding week. Industries received 902 cars and retail yards 216 cars. Of course, much of this coal was loaded at the mines before April 1.

COLUMBUS

A considerable amount of non-union coal is being received. There is also considerable Ohio-mined coal available for sale as the tracks at certain junction points are still loaded. Despite the suspension there is no increase in

demand of consequence. Inquiries are more numerous, but these are for small lots mostly as the larger consumers have been pretty well supplied.

There is a definite reduction in certain grades on track awaiting sale. Retailers have not advanced prices and are now selling Hocking lump at \$6; West Virginia splint lump at \$6.75 and Pocahontas lump around \$7.50@7.75. These prices are considerably lower than those prevailing for several weeks previous to the suspension.

Operators in Columbus who are interested in the non-union fields are looking around for Lake contracts and a few have been secured. Prevailing prices are \$1.75@2 for 1½-in. and 2-in. lump.

PITTSBURGH

By the end of the second week there were reports of some non-union strikers going back to work while fewer new strikes were being reported. The strikes have been thickest in the lower Connellsville or Masontown field. The Frick company has started a number of plants in the old basin, to relieve the situation, but only for making coke, no coal being shipped.

The strikes in the non-union districts are quite important to the iron and steel industry, on account of the industry's large dependence not only on Connellsville coke but on Connellsville coal, not much striking in this respect having been anticipated.

The market for Pittsburgh district coal practically disappeared April 1. For a few days there was more or less of a market in Connellsville as well as in Westmoreland coal. These practically disappeared later, and there was some trading in Somerset coal, but this in turn has been dwindling. Offerings have not disappeared entirely, but prices asked so mounted that prospective buyers lost interest.

Some of the coal buying has been by consumers who stocked, but who wished to add to their stocks. Other buying has been by small consumers who did not stock.

In some quarters a turn in the tide of non-union strikes within a week or two is expected. It is the common view that they cannot last long enough to connect with the time, certainly quite a distance in the future, when the strike at the union mines will really come to a head.

BUFFALO

Inquiry has increased although no active demand is prevailing. Few consumers have as yet run out of coal, but the likelihood of getting any large supplies in the near future is remote.

The districts that were counted on to supply plenty of non-union coal are producing only small quantities, and a great many mines are down entirely. Some expect this to last for two months or so, while others say the non-union men will soon be working again.

Any coal that arrives here at present has to be sold at a good deal less money than the prices reported to be prevailing in the Pittsburgh market. Operators who quote high prices in the

local trade are advised that consumers will not pay the big advances asked, some of the latter saying that they will close down their plants before doing so.

Coal prices are more or less a matter of bargaining. Some three-quarter steam coal sold here last week at \$2.50, while similar coal at the mines is quoted about \$1 higher by operators. Steam slack is worth almost as much. High-grade gas lump at the mines is quoted at \$3.75.

DETROIT

Neither steam nor domestic sizes are in active demand. So far, the seeming indifference of buyers to the strike is a unique feature. Shipments from the non-union districts are apparently meeting the requirements of those dependent on renewal of supply at short intervals. While the amount of coal coming to Detroit is not large, jobbers say it is usually possible to find a little free coal on tracks when inquiry appears for it. Retail dealers have considerable coal on hand and they are not adding to their stocks.

West Virginia or Kentucky 4-in. lump is quoted at \$2.25, 2-in. lump and egg, \$2, mine run, \$1.40, nut, pea and slack, \$1.35. Smokeless lump and egg is \$2.75@3, mine run, \$1.85, nut, pea and slack, \$1.50.

EASTERN OHIO

The strike resulted in a complete closing of mines in eastern Ohio except that a negligible quantity of fuel is being produced by stripping mines whose employees are not affiliated with the United Mine Workers but subject to separate and distinct local organizations. It is estimated that these operations loaded about 20,000 tons during the week ended April 8.

The aggregate number of mine workers affected by the suspension is about 16,000. The entire body is idle except those designated to remain at the mines to protect the property, operate pumps, etc. No disturbances have been reported in the field since the inception of the strike and the attitude of the miners seems to be more toward taking a vacation than participating in a strike.

While many mines entered the strike period with moderate quantities of "no-bill" coal on track, total being estimated at somewhere between 500 and 1,000 cars, this fuel has been moved to destination notwithstanding that demand was woefully lacking during the first week of the strike.

Most all steam users continue to be well-stocked and operators and jobbers state that there is little demand. However, because of the very limited supply of spot coal available from Ohio mines, there has developed a shortage of slack accompanied by decided stiffening in prices. Dealers in non-union coal state that purchasers are few although this coal is available in almost any quantity desired.

NORTHERN PANHANDLE

Production has been cut in half by the strike and the United Mine Workers are waging a desperate campaign, especially those in the vicinity of Moundsville, and have succeeded in closing two of the Marshall County mines. Expiration of contracts on April 1 of course is responsible also for a part of the loss in production.

Cincinnati Gateway

Steel-Trade Demand Boosts Gas Mine Run and Screenings

Mines Sell Lump and Block on Mine-Run Basis to Make Screenings—Non-Union Output Contingent on Demand—Kentucky Production Maintained on 50 Per Cent Basis.

DEMAND from steel makers has upset this market. Gas mine run and screenings have jumped 50c. and are out of line with other coals. Mines are selling lump and block on a mine-run basis and are screening out this tonnage to get the top of the market. Shipment of smokeless coals to the seaboard has improved the situation on these fuels, but prices have not been increased much, if any.

Non-union production is still limited by the demand rather than by any labor trouble.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Judging from the well-organized effort launched during the first week of the strike to induce non-union miners to join the ranks of the strikers, New River and Mining Gulf are considered the strategic points at which to attack the non-union fields. In the New River field the United Mine Workers' organization has succeeded in bringing many former members back into the fold. Idleness growing out of a poor market has made it easier than would have otherwise been the case.

Organization effort has been confined to the edge of the Winding Gulf field nearest the New River district and this work has been stopped for the time being by an injunction. There has been a large movement over the Virginian to Tidewater. Lack of market is restricting the output more than the strike. Inquiries are beginning to multiply but spot buying has not reached any larger proportions.

POCAHONTAS AND TUG RIVER

As showing how little effect the strike is having on the mines in the Pocahontas field, production in that district is now at the rate of about 350,000 tons a week. There does not appear to be any sign of dissatisfaction among the miners, all of whom are working. When a better demand develops it will be possible to ship even a larger volume of coal.

The only mines in the Tug River region not in operation are those which have been shut down for many months because of lack of orders. No inroads have been made in any manner by the strike. Shipments are mostly to Western markets and largely on contract, though there are some signs of increased spot buying.

SOUTHEASTERN KENTUCKY

It has been reported that a steel plant has just placed an order for 2,500 cars in southeastern Kentucky and this with other fairly large-sized orders from the North and Northwest, has improved the situation. Production has been about 50 per cent of capacity since April 1, but indications are that next week will show an increase.

HIGH-VOLATILE FIELDS

KANAWHA

All but about 20 mines have ceased to produce as a result of the strike. No mines on the Kanawha & Michigan are being operated but about 200 tons a day are being produced on the Kanawha & West Virginia. Market conditions have something to do with the idleness, as prices still remain on a low level owing to the poor spot demand, although inquiries are beginning to become a little more numerous.

LOGAN AND THACKER

There has been no interruption to mining operations in the Logan field. Production has continued at about 50,000 tons a day. So far there is no activity in spot buying, much of the coal moving on a contract basis. The spot demand, however, shows signs of becoming somewhat heavier, if inquiries are to be taken as a criterion.

Although the U. M. W. claimed that the Stone Mountain Coal Co. miners had gone on strike, there has been no cessation of operations at any plant in the Williamson field. There is only minimum production under existing market conditions and whenever a better demand develops it will be possible to speed up to some extent. Were it not for contract shipments, it would be difficult to find an outlet for all the coal produced.

NORTHEASTERN KENTUCKY

Mines on the Big Sandy and its tributaries are producing at the rate of 150,000 tons a week or more. A few mines have suspended but only to the extent of about 3 per cent of actual tonnage. Whatever loss there is in production is due largely to "no market."

CINCINNATI

There had been a little flurry here following the demands from seaboard, but this had settled itself within two or three days, but when the Mahoning Valley district pounced upon the available coal here and called for more, the market perked up and in three days scored an advance of 50c. on the better grades. This resulted in some strange values being recorded in that the gas coals were brought on a plane with the smokeless sizes and in some instances were held higher.

Smokeless has been in a little better position though this is not reflected in prices. A larger tonnage is moving to seaboard where the demand is quickening to the place that the West will not be the only spot in which such coal can be placed. The call for screenings

by steel plants and inland industries was the cause of an advance in price and this has held. The lump and egg drags as a result of the passing of the domestic season.

Southeastern Kentucky reports that a large number of non-union miners are taking to the hills for farming for the summer and their passing is slowing down production. This has resulted in a cutting down in the accumulation of loaded cars that were being carried in the district and a demand for higher prices.

Only one change has been noted in the retail prices. Those firms that had been offering nut and slack at \$4@4.25 for several weeks past have dropped out of the market and the range now is \$4.50@5.

West

OKLAHOMA

Oklahoma will not be seriously affected by the strike. Railroad officials claim they have large stores of coal in their yards, and the dealers have stored heavily. Many large industries have recently converted their plants to oil burners, and still others made hasty conversions when it became apparent that the coal strike would materialize.

Approximately 7,000 coal miners in Oklahoma laid down their tools, and nearly 100 mines were affected. All coal mines in the McAlester section, with the exception of the Pittsburgh County Coal Mining Co., shut down on April 1. The Pittsburgh mines are operated with non-union labor and will not be affected.

KANSAS CITY

Notwithstanding the strike the market is practically dead. This condition is likely to continue for some time as there is ample coal in storage both for steam and domestic use. No change in prices is noted and unbilled coal at the mines is moving very slowly.

DENVER

Lack of business is about the only complaint the operators are raising. The strike's throttling effect on production is growing less and less and if business justified it they say they could open up most of the operations that are now closed.

Stocks are big enough throughout the region normally fed by Colorado mines and weather has been warm enough to combine to hold down demand, but in spite of that the bituminous operations in the southern part of the state are producing about 90 per cent of capacity today. This is probably a bigger output than the region raised before the strike. Prices show no material change.

SALT LAKE CITY

Retail business has been quite good during the past few days as the result of a sudden drop in the temperature, followed by a heavy snowfall. The strike situation appears to be about the same. According to figures just received from the office of the chief mining inspector, production for March showed an increase, the figures being 434,022 tons. In February the tonnage was 402,492.

News From the Coal Fields

ALABAMA

J. B. Foster has been elected secretary-treasurer of the Mount Carmel Coal Co., with headquarters in Birmingham. He will also have supervision over the sale and distribution of the output of the company, which operates a mine at Mount Carmel, Walker County.

Labor conditions are tranquil in the Birmingham district, only a few instances being reported where mine labor has failed to report for work as usual. At several small operations in Walker and Bibb counties men are reported out, but these disturbances are purely local and will have no material bearing on production. Viewing the situation as a whole production is undisturbed and output is closely approximating normal. Ample coal can be produced on short notice to care for all outside requirements.

CONNECTICUT

The City of Bridgeport recently awarded contracts for approximately 500 tons of anthracite and bituminous coal, for use at the Municipal Garbage Plant. Only one of the bidders submitted figures on a yearly basis. Due to this fact the contracts awarded cover but a three-months' period. **Vincent Bros. Co.** got the anthracite order; **The City Ice & Coal Co.**, the bituminous needs; and the **Karm Terminal Co.**, the order for the buckwheat coal.

The American Coal Co., Hartford, recently let the contract for a new building on Edwards St. It will be two-stories high, of brick construction.

The A. H. Powell Co., Inc., coal dealers, New Haven, recently filed a certificate increasing the capital stock of the company from \$200,000 to \$300,000.

ILLINOIS

Peabody-Houghteling & Co., Chicago, is offering \$1,250,000 first mortgage 7½ per cent serial gold bonds, issued by the **Southern Gem Co.**, a subsidiary to the **Southern Gem Coal Corporation**, Chicago.

The strike is having its direct effect upon the "white-collar" jobs in the coal industry too. Many of the big jobbers in Chicago and the operators who have selling organizations, are reducing their organizations to skeletons. "We can't afford to do otherwise" is the general explanation. So expenses are trimmed to the quick and in a few cases small jobbers are closing up their affairs and quitting the field. If the tie-up lasts until June 1, some of the strongest companies who are doing their best to hold their staffs together say they will have to make another cut. This situation gives rise to all sorts of stories about the instability of this company and that. When the **Fort Dearborn Coal Co.**, a twenty-five years old concern, discontinued its New York office permanently and closed up its agency in Cincinnati probably temporarily, let its Cincinnati representative, **R. H. Boykin**, go, and when **William Fitzgerald**, vice-president in charge of sales, resigned and returned to the Chesapeake & Ohio R.R., it was noised about that the company was quitting business. **George Stahmer**, president, declares the company is merely exercising good business judgment in a time of stress and that it is solvent and has no intention of closing up its affairs. He said the executives of the company are all remaining with it. During the last week, he says, it has closed some important contracts and that its business is on the upgrade.

An order from the Illinois Mine Workers has been received at Mt. Olive, by the miners of the **Hoosier Mine**, to have the mine and the airshaft retimbered through-out.

W. L. Robinson, of Baltimore, superintendent of fuel and locomotive operation for the B & O., was in Chicago a short time ago furthering plans for the International Railway Fuel Association convention to be held in that city May 22 to 25.

E. R. Keeler, sales-manager of The Taylor Coal Co. at Chicago is in Louisiana for a two-weeks' stay.

The Electrical Material Co., Inc., of Chicago, has moved to 158 West Lake St. Heretofore offices were located at 618 West Jackson Blvd., with materials stored at two different warehouses.

Several coal operating companies that keep sales crews in the field have called in their men recently for conferences. The coal trade generally is drawing a deep breath preliminary to a campaign of stiff competition as soon as the strike is over.

The Bell and Zoller Coal Co. is opening up a section of Zeigler No. 1 Mine at Zeigler, which was sealed off four years ago to stop a fire.

INDIANA

A report just compiled shows that more coal mine accidents occurred in Indiana in March than in any three months previously. In the one month more than 1,000 injury reports were filed, but a majority were of a minor nature.

John W. McCordle, chairman of the Indiana Public Service Commission, said recently that it is certain that all of the **Indiana coal road of the Chicago & Eastern Illinois R. R.** will not be abandoned as has been proposed by the company. The railroad has a petition before the Interstate Commerce Commission asking for permission to abandon service on the road. Mr. McCordle said that it has been demonstrated that certain sections of the road can be operated at a profit.

The Raymond Coal Co., Valparaiso, has been sold to **R. C. West**, of Gilman, Ill. Mr. West took immediate possession and will enlarge the coalyards and erect a number of new buildings.

The Howe-Coulter Coal Co., a Delaware corporation, recently filed papers with the secretary of state at Indianapolis, qualifying to do business in Indiana. The company was organized for the purpose of developing lands containing coal, clay mineral, gas or oil and \$120,180 of the capital is represented in Indiana. **Norman H. McClevey**, of Petersburg, has been named Indiana agent.

KANSAS

Kansas production in 1921 was 31 per cent less than that of 1920, according to the annual report of the state mine inspector. The slump was due primarily to the general strike beginning when **Alexander Howat**, then president of District 14, **United Mine Workers of America**, began serving a 6-months' sentence for violation of the industrial court law by calling a strike on a small mine in that county several months earlier. The district was suspended by the international union Oct. 13, and it was well toward the close of the year before a large part of the miners resumed work. The total tonnage was 4,028,520, compared with 6,130,341 in 1920. The year's output was 935,009 tons of lump, 1,095,145 of sack and 1,998,366 mine run. These figures are viewed with interest as operators in this field have frequently asserted that methods used by miners in shooting in this field cause an unduly large percentage of the lower grades. Fatal accidents for the year, fourteen, made the smallest percentage in the last 25 years, the life loss being 3.72 for each million tons. The non-fatal accidents numbered 740, which is 183.68 for each million tons. The cause of the lateness with which the report was completed was that while the big operators, members of the **Southwestern Interstate Coal Operators' Association**, made their quarterly returns promptly, small operators did not do so until inspector **Sherwood** placed their names in the hands of the county attorney and they were notified they would be prosecuted if they did not comply with the state law requiring such reports.

In a case tried recently **George Chausard**, of Franklin, a miner formerly employed by the **Western Coal & Mining Co.**, admitted that during the seven years he worked for the company he had filed twelve claims for personal injuries, part of them alleged to be permanent. The jury

brought in a verdict in favor of the company.

KENTUCKY

The Supreme Elkhorn Collieries, Ashland, has been incorporated with capital of \$175,000. **E. E. Seaton**, **J. B. Thomas** and **L. G. Byrne**, incorporators.

The Federal Trade Commission has issued an order to cease and desist against the **Chemical Fuel Co. of America, Inc.**, of Louisville. The order prohibits the respondent from publishing and circulating, or causing to be published and circulated, advertisements, circulars, folders, letters or any other printed or written matter wherein it is stated that respondent's product "**Tri-Oxylene**" has been tested and has been approved or recommended by the Government Bureau of Mines in Washington, D. C., or words to that effect.

The Louisville & Nashville R.R., is working steadily in the **Irvine-Ravenna** yard district, in double tracking and increasing facilities for handling more cars, to render better service to the **Hazard** field, which has long been above the capacity of the railroad to handle when mines are busy.

The Kentucky King Coal Co., owned by Eastern capital, one of the large mines operating in the **Wallins** seam on **Wallins Creek**, adjacent to **Henry Ford's Banner Fork Mine**, closed down late in March for extensive repairs, which will include a new incline approximately 2,500 ft. long and a new headhouse at the top of the incline.

K. U. Meguire, of the **Harlan Coal Co.**, Louisville, was in Bell and Harlan counties recently looking after his company's interests in that section.

J. H. Martin, of the **Kanawha-Knox Coal Co.**, headquarters in Cincinnati, was visiting **Pineville** and **Middlesboro** recently. The company has a large mine on the **Cumberland Valley Division** of the **L. & N.** at **Ely**.

Harlan-Kellioka Coal Co. has increased its capital from \$200,000 to \$250,000.

The Castro Mining Co., Cary, capital \$15,000, has been incorporated by **C. L. Goch**, and **Frank C. Martin**, **Pineville**, and **J. Y. Page**, **Wallsend**.

D. M. Williams Coal Co., **Krypton**, Capital \$25,000, has been formed by **D. M. Williams**, **Pryse**, **W. B. Napier**, **Krypton**, **Wm. Ledyard**, **Richmond**.

MINNESOTA

George A. Tomlinson, Cleveland, large operator of freighters on the **Lakes**, has wired his **Duluth** office to take no chances on the strike and to protect his ships thoroughly in the matter of coal supply. The **Duluth** office will contract for sufficient coal to take care of the ships at the **Head-of-the-Lakes**.

W. W. Broughton, president of the **Pittsburgh Coal Co.**, was in **Duluth** recently on a tour of inspection of the company's docks.

Following a battle in **Duluth's** city council, the **Duluth Central Heating Co.**, has been granted a franchise to operate. The company will take care of the entire central business of the city, and it is expected will render more efficient service than private plants. The project had the approval of coal men and business men generally.

Taking advantage of the lull in operations **The Inland Coal & Dock Co.** has let contracts to build a 500-ft. extension to its dock at **Duluth**. This will make the total length of the dock 1,970 ft. Storage capacity will be increased by about one-third. **R. C. Buck, Inc.**, of **Superior, Wis.**, has been awarded the contract at a figure which is reported in the neighborhood of \$150,000. The extension will be finished about July 1.

MISSOURI

An estimate of the deposits in the **Deep-water** field shows about 5,000 tons to the acre, or a million tons to the entire field. **The Progress Coal Co.** has obtained title to practically all of these rights.

The Alburn Coal Co. will take over the property of the **Plattsburg-Vibbard Coal Mining Co.**, which was inventoried at \$65,000. This property was recently destroyed by fire. The mine is at **Vibbard** and was sold at public auction for a price understood to be \$10,000. Plans are under way to build new top works and reconstruct the mine.

A new drift mine on a 90-acre strip is being opened up near **Boonville** and the balance of the 231-acre coal bearing area will likely be stripped.

NEW YORK

The First Lake coal to leave Buffalo this year was on the Steamer John P. Rice, which left on April 12, bound for Chicago. The first bituminous coal cargo to arrive at Buffalo was that of the Steamer L. R. Davidson, arriving the same day from Sandusky. The latter coal was for the Donner Steel Co.

The Erie Railroad Co. has many thousand of tons of bituminous coal in its yards at Buffalo, which will be distributed along the lines and to locomotives as needed.

C. E. Tuttle of the Tuttle Coal Corporation, New York City has returned from a brief sojourn at White Sulphur Springs, W. Va.

Fred H. Lohr, a Buffalo retailer, is putting in a 1,000-ton storage plant. John F. Graham, a Burt, Niagara County dealer, is installing a 1,200-ton plant. Both will be constructed by the Kon-Wald Engineering Co., Buffalo.

Daniel Anthony who for some time has been general agent for the Lehigh & Wilkes-Barre Coal Co., at 143 Liberty St., New York City, has been elected vice-president and general agent, succeeding to the full title of the late P. B. Hellner, who died about a year ago.

Lewis E. Serenbetz who was for some time district sales manager for Majestic Coal Co., Inc., at 120 Broadway, New York City, has been appointed sales manager for Titan Fuel, Inc., of 32 Broadway. Michael Tuch, president of the Brooklyn Union Coal Co., is the president of the Titan Fuel corporation.

Two new coal companies have taken offices in the newly-completed Lafayette Bldg., Buffalo, the Theodore Krug Coal & Coke Co., with Fred Eckelman as manager, and the Dowdon Coal & Coke Co., James F. Hanlon, treasurer and manager.

A report of the New York Public Service Commission as of March 31, shows that the heating and lighting companies of Greater New York, did not neglect to add to their fuel reserves during the last two weeks of that month. Anthracite stocks were 252,104 tons and bituminous coal 126,126, as compared with 228,822 tons of the former and 104,301 tons of soft coal on March 17.

OHIO

Eaton Rhodes & Co., Cincinnati, has published an attractive booklet "Crusader," a story of the Elkhorn, dedicated to John C. Mayo, whose activities made possible much of the development of eastern Kentucky.

V. C. Hellner, of the New York office, Arnold Gerstelle, of the Philadelphia office, and W. H. Harman, the Michigan representative of Percy Hellner & Son, met recently in the Cincinnati office, where the western situation was gone over. Mr. Hellner and Mr. Gerstelle paid a visit to the Puritan mines at Burch, W. Va., in which Mr. Gerstelle is interested. While in Cincinnati Mr. Hellner looked over the first copies of his book on angling which is being published by Stewart and Kidd. He has taken a lease on Paul Rainey's farm in Africa and expects to go there this summer for fishing and hunting.

West Virginia operators who were in Cincinnati recently were Will Pritchard, vice-president of the Long Flame Coal Co. of Stowe, J. W. Moore, of the Ivy Branch Coal Co., C. C. Moore, of the Laurel Branch Coal Co., and Mike Roach of the Logan-Pocahontas Coal Co., all of Charleston, and H. S. Gay of the Gay Coal & Coke Co., of Logan.

The Pocahontas-Kanawha Coal Co. has been formed in Dayton, with Bert Shumate as president and L. R. Paul as secretary-treasurer. Mr. Shumate was long with the S. J. Patterson Co., of the Gem City and was for some time its sales manager.

Some important coal mining companies in the No. 8 district with headquarters in Cleveland are taking advantage of the lull in operations caused by the strike to launch needed repairs, improvements and extensions. This work is being done by clerks, mine superintendents, and various office employees and is meeting with no opposition on the part of the strikers. Much of the work is being done with the thought that the strike will be followed by an era of activity in the industry and far-seeing companies are making provision for a larger output. Others are expected to follow the example of those who have started repairs. The Maher Collieries Co. has a force of about 50 men at work on its mining properties making improvements and extensions. Sidetracks are being lengthened, tipples repaired and ballasting work

done. This company is one of those which is preparing for a large demand for coal. The Pursglove Coal Mining Co. also has started to make improvements at its properties. It will increase and improve its screens for preparing the various sizes.

PENNSYLVANIA

Recently, the store and building housing the moving picture show and bowling alleys of the Hillman Coal & Coke Co., at the Jerome Mines, Jerome, Somerset County, were destroyed by fire.

The Bessemer No. 1 mine of the Republic Iron & Steel Co., at Russellton, reached its high mark of production in the month of March. A total of 69,300 tons was hoisted. The mine was opened up 20 years ago.

Officers and directors of a number of the subsidiary companies of Cosgrove & Co. held their quarterly meetings in Johnstown recently and all subsidiary officers reported record breaking business for the month of March. The companies represented at the meeting included the Sanford Coal Co., Ernest Coal Co., and the North Shore Coal Co. The North Shore company owns and operates large retail yards in Evanston and Chicago.

Four plants in the Indian Creek Valley were rendered idle by a breakdown in the electric generator at the works of the Sagamore Coal Co., near Indian Head. The other plants affected are those of the Howard Coal Co., the Romney Coal Co. and the Oneida Coal Co. The three get current from the Sagamore company.

March was a record-breaking month for the Locust Mountain Coal Co. at the Weston colliery. The total tonnage shipped reached 95,000 and the total tonnage actually mined, 90,032. There were 23,283 mine cars dumped, a daily average of 862. To move this tonnage 2,127 railroad cars were required, which would make a train of fifteen miles long.

A summer course in coal mining will be offered this year by the Co-operative Department of Mining Engineering at Carnegie Institute of Technology, Pittsburgh. The course will be from June 26 to July 21, and will be given in co-operation with the United States Bureau of Mines. The primary object will be to prepare miners for the examinations of the Pennsylvania State Department of Mines for positions as fire-bosses and mine foremen. The department offers two fellowships in mining research, and two in teaching and research, in co-operation with the Pittsburgh Experiment Station of the United States Bureau of Mines. Fellowships are open to the graduates of universities and technical schools who are properly qualified to undertake research investigations.

The State Employment Bureau, Department of Labor and Industry, in its semi-monthly report on the employment situation in Pennsylvania, gives as the number of miners out of work for the last half of March, 8,500. The bureau's report is made as of April 1.

The Workmen's Compensation Board has dismissed the appeals of the Hudson Coal Co., Scranton, in two cases. In both the findings of fact and the conclusions of law of the referee were affirmed. The cases were those in which Pasquale Trumba, Carbondale, was the claimant, the company appealing from an order of Referee Beemer. District No. 3, modifying a compensation agreement, and Veroniko Machaty, Wilkes-Barre, the company in this case appealing from an award of Referee Lewis, District No. 9.

Removal of 148 bodies from the Polish National cemetery, at Plymouth, has been started. The disinterment of the bodies has been made necessary by mine caves that have spread to such an extent that all of the bodies in the cemetery might at any moment drop down into the underground workings. The work is being done by the Lehigh & Wilkes-Barre Coal Co., over whose mines the cemetery has been located for many years.

A. G. Weary, inspector of mines for the Pennsylvania, has moved his headquarters from Cresson to Greensburg.

UTAH

The Rocky Mountain Coal Co. has been granted permission to sell \$500,000 of first mortgage 7 per cent bonds at a discount not to exceed 10 per cent of the par value, provided the company gives one share of common stock for each \$4 of the par value of the bonds, but it shall have the privilege of issuing its first mortgage bonds for the total of \$1,000,000. A commission of 15 per cent is allowed for the selling.

Application to develop power for operation of coal mines in Utah has been made to the Federal Power Commission by James H. Mays and Harry L. Gandy. They ask a preliminary permit to develop power on Huntington Creek in the Manti National Forest, Emery County. The project will consist of a small diversion dam, a short conduit, a power house and a transmission line leading to proposed coal mines nearby. The power will be used in mining coal on a large tract of land leased from the Government.

VIRGINIA

Officials of the Chesapeake & Ohio were here recently to confer with coal shippers relative to the controversy over alleged irregularities in the conduct of the C. & O. Coal Exchange at Newport News. Shippers through that exchange have asserted that demurrage charges have been improperly placed, somewhat similar to the claims made by the Lambert's Point Shippers.

WASHINGTON

Andrew A. Corothers, of Ellensburg made final proof on his 40-acre coal entry at the United States land office recently. Mr. Corothers made his entry years ago under the provision of an old law and is allowed to prove up by paying \$20 an acre. Under the present law all he could do would be to lease the land from the Government and pay a royalty on all coal mined.

Mines of the Pacific Coast Coal Co. produced 61,687 tons of coal last month. The company so far is unaffected by labor troubles of other mining regions.

WEST VIRGINIA

Pending an adjustment of the strike and at a time when mining operations are generally suspended, Robert Talbott & Co., of Fairmont, are installing a new tipple, conveyor and equipment at the Agnes Mine near Lowesville in Monongalia County, at a cost of about \$15,000. Although the new conveyor has a wooden frame, it is really of steel construction extending 226 ft. down a hillside to the tipple. The plant will have a capacity of 250 tons an hour when the new equipment is put in use. Bar screens will make it possible to prepare and load 1½-in., ¾-in., mine run and slack into cars. Under the new arrangement slack and ¾-in. can be loaded simultaneously.

Permission has been given to the Clayton Young Coal Co., at Norwood, near Clarksburg, to operate its small mine in order to furnish fuel for the Pittsburgh Plate Glass Co. This permission was granted because the Plate Glass company is under contract to furnish electric light to Norway.

Taking advantage of the lull in business and operations the Fort Grand Coal Co., which has a large mine on the Indian Creek & Northern R.R. in Northern West Virginia is installing electrical equipment at a cost of approximately \$15,000.

Complete electrical equipment is being installed by the Fairmont Electric Service Co. for the plant of the Rock Island Coal & Coke Co., at Meriden. A substation is being erected and this will be equipped with three 150 kw. 22,000 to 2,200 volt transformers, a complete steel tower, switches, lightning arresters and protective apparatus. The company will also install a 300 kw. generator set.

J. C. Sullivan, one of the largest shippers on the Virginian Ry. and who controls certain holdings on the N. & W., left late in March for Texas to inspect his oil acreage which is incorporated under the name of the West Virginia Mexia Corporation. Mr. Sullivan expected to be away during the first half of April.

Brooks Hutchinson, of the Rich Creek Coal Co., of Fairmont, returned to his headquarters about April 1 from a business trip to New York.

It has been necessary to take legal action in the circuit court of Summers County in order to terminate the affairs of the Hump Mountain Coal Co., whose career was beset with difficulties from the very outset. The company expended \$150,000 in making its first opening only to strike rock. Then \$50,000 was spent in order to penetrate the barrier. That experiment having been unsuccessful the company expended another \$75,000 after bonding itself for that amount in driving another opening. Creditors, however, became impatient and pressed for settlement.

ONTARIO

F. A. Fish, head of the F. A. Fish Coal Co., who is looking after the Pittsburgh office of the company, spent the Easter holidays at his home in Toronto.

Coal is still coming in over the international bridge and the pinch as yet is not being seriously felt by the railroads. The railroads at Bridgeburg have made reductions in their staffs, owing to the falling off of traffic.

It is stated that the Grand Trunk has 117,000 tons of soft coal in the Bridgeburg yards, prepared for emergency purposes, and some of this is being loaded for use at other points.

WASHINGTON, D. C.

The bill of Senator Frelinghuysen to establish the coal industry comes up every time the Senate takes up unobjectioned bills on the calendar, but is always passed over. The bill came up recently when on the suggestion of Senator King, Utah, that it "will take considerable time" it was passed over.

The Dorchester, Mass., Board of Trade has petitioned Congress for the passage of the Luce bill prescribing the quality of anthracite.

J. D. A. Morrow, vice-president of the National Coal Association, on April 13 addressed the Economic Club of Worcester, Mass., on the general economic situation surrounding the coal industry.

The United States Civil Service Commission announces open competitive examinations for junior technologist on May 24, July 5, and August 23. Vacancies in the Bureau of Standards, Department of Commerce, for duty in Washington, D. C., or elsewhere, at \$1,200 to \$1,500 a year, and in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from these examinations, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Appointees whose services are satisfactory may be allowed the increase granted by Congress of \$20 a month.

The House Committee on Naval Affairs in reporting to the House the Naval appropriation bill for the year beginning July 1 limits to \$16,000,000 the funds which the Navy may use in the purchase of fuel. Last year Congress appropriated \$17,500,000 for Naval fuel, and recently appropriated an additional \$6,282,685 to meet a deficiency in the fuel requirements of the Navy. The fuel appropriation recommended is \$9,000,000 less than the estimates. For fuel for the Marine Corps the committee recommends \$850,000, which is \$260,000 more than the current year but \$34,600 less than the estimates.

In testimony before the Senate Committee on Interstate Commerce, **Daniel Willard**, president of the Baltimore & Ohio, denied charges previously made by Frank J. Warne, statistician for railroad labor unions. He said the B. & O. was not interested through stock ownership or otherwise in any company making commercial shipments of coal from mines tributary to its lines, or for that matter, from anywhere else. He said the B. & O. had disposed of such interests 14 years ago.

Traffic News

The I. C. C. has denied the petition of the Chicago & Alton, the Illinois Central, and the Chicago, Peoria & St. Louis railroads to increase rates on coal, interstate and intrastate, from mines on these lines, to Peoria and intermediate points.

In the complaint of the C. N. Dietz Lumber Co., an examiner recommends that rates on coal from points in Pennsylvania, West Virginia, and Oklahoma to Iowa, Nebraska, and Wyoming points are not unreasonable, but that the rates from points in Wyoming, Colorado and Illinois to points in Iowa and Nebraska and to Elk Point, S. D., are unreasonable.

An examiner of the I. C. C. has made a tentative report in the case of **Henry W. Somers** vs. the New York, Ontario & Western Ry. Co., et al, Docket No. 13,024, of which the following is the syllabus: "Rates on steam sizes of anthracite, in carloads, from points in the Wyoming field of Pennsylvania to Mechanicville, N. Y., and points taking the same rates, found unreasonable and unduly prejudicial. Reparation awarded."

In the complaint of the Silgo Iron Store Co., in which it had previously held that a shipment of coal from Coketon, W. Va., to

Lamar, Col., was overcharged, the commission, on application of the Director General of Railroads, has ordered the case reopened for further argument.

The commission has declined to reopen the complaint of the Peerless Coal Co., of Illinois, in which it decided that the rates on coal from points on the Springfield Terminal Railway to various destinations were not unreasonable.

The I. C. C. has canceled the hearing scheduled for April 22 at St. Louis in the matter of reduced rates on coal from Illinois mines on the Illinois Central to Arkansas points on the St. Louis Southwestern Ry.

The commission has denied the petition of the Fifth and Ninth Districts Coal Bureau of Illinois and the Spring Valley Coal Co., for a general investigation into all rates on coal from mines in western Kentucky, Indiana, Illinois, Iowa, Kansas, Missouri, Arkansas, Colorado and Wyoming and from the docks to all destinations in Illinois, Wisconsin, Michigan, Iowa, Minnesota, the Dakotas, Missouri, Kansas, Nebraska and Colorado. The commission says its decision in the Illinois coal cases recently announced will stand.

On petition of the B. & O. the commission has reopened for further argument the case involving routing of coal from Western Maryland R. R. mines to Eastern destinations. The commission had decided that the application of through rates on coal from mines on the Western Maryland to Eastern destinations in connection with the B. & O., restricted to the route via Cumberland, Md., was not justified.

The C. & O. Ry. has put in a new rate to St. Louis from the West Virginia smokeless fields of \$3.62, which is a reduction of 66c. per ton on smokeless coals. The new rate on Kanawha is \$3.47, also a reduction of 66c.

Association Activities

Canadian Retail Coal Association

The eighteenth annual convention of the association was held at Toronto, April 6 and 7, President J. M. Daly, of London, Ont., occupying the chair. G. W. F. Woodside, of Albany, N. Y., secretary of the New York State Coal Merchants' Association, delivered an address on "The Ideal Association." President Daly spoke strongly in denunciation of public ownership, which he regarded as a curse to any country. Major W. R. Coyle, of Bethlehem, Pa., spoke on "The New Co-operation, or the Partnership between Producer and Distributor." He thought it unjust that Canadians should have to prepay freight from the mines, but the good feeling between the United States and Canada was sufficient to insure the amelioration of any commercial or financial difficulties arising between the two nations. "What we are doing" was the topic of an address by Charles B. F. Staats, of Albany, N. Y., urging co-operation between retailers and operators in solving the problems which confronted the trade. Theirs was not a business in which profits could be increased by an increased turnover as consumption was more or less fixed in volume. Decrease in the cost of operation and in overhead were the only avenues open to the retail merchant by which profits were available. Charles A. Ellwood, vice-president of the New York Coal Merchants' Association, expressed similar views as to the necessity of cost reduction.

The following officers were elected: President, G. F. Rogers, St. Catharines; vice-president, W. H. Smith, Owen Sound; directors, M. F. Gray, Guelph, F. A. Dunlop, Hamilton, and J. F. Lindsay, North Bay.

Obituary

Henry Alexander Laughlin, a director of the Jones & Laughlin Steel Co., died on March 21, at his home, Greylock, in Chestnut Hill, Philadelphia. He was the son of James Laughlin, founder of the steel company. Mr. Laughlin was one of the first to recognize the value of the coal deposits on the Monongahela River and foresaw the advantages to be derived from them by Pittsburgh.

Clarence Seymour, of Warren, R. I., died at his home in that town, April 5. Mr. Seymour formerly conducted a coal and grain business at the Collins-Driscoll wharf

in Warren, under the name of Seymour Bros., for a number of years.

James J. Bucklin, well-known coal operator of Brazil, Ind., died at the home of his son, H. E. Bucklin, of Indianapolis, Ind. He was treasurer of the Crawford Coal Co.

Willis Glover Townes, vice-president of Archibald McNeill & Sons Coal Co., Inc., of New York, died recently at Palm Beach, where he had been spending the past few weeks. Mr. Townes was well known to the coal trade and at one time was chairman of the financial committee of the National Democratic Executive Committee. He was a member of several clubs.

Louis F. Fogg, sixty years old, a retired coal and coke operator, died in Uniontown, Pa., recently, following a short illness. He was born in Boston and came to Somerset in 1880.

Robert L. Dixon, member of the firm of Dixon & Billrey, Murphysboro, Ill., died recently at his home. He had been connected with the coal business in Illinois for over 36 years and is well-known throughout the district.

Coming Meetings

National Retail Coal Merchants' Association. Fifth annual convention at the Drake Hotel, Chicago, Ill., May 18-20. Executive secretary, Joseph E. O'Toole, South Penn Square, Philadelphia, Pa.

Colorado and New Mexico Coal Operators' Association. Annual meeting June 21 at Denver, Col. Secretary, F. O. Sandstrom, Boston Building, Denver, Col.

Missouri Retail Coal Merchants Association will hold its annual meeting May 16 and 17 at the Planters Hotel, St. Louis, Mo. Secretary, F. A. Parker, Arcade Bldg., St. Louis, Mo.

National Coal Association will hold its annual meeting at Congress Hall, Chicago, May 24 to 25. Committee on arrangements, Harry N. Taylor, chairman, Dr. F. C. Honnold and Walter Cunningham.

The American Wholesale Coal Association will hold its annual convention at Detroit, June 6. Secretary, G. H. Merryweather, Union Fuel Bldg., Chicago, Ill.

The fourteenth annual meeting of the **International Railway Fuel Association** will be held in the Auditorium Hotel, Chicago, Ill., May 22 to 25.

Society of Industrial Engineers will hold its national spring convention at the Hotel Statler, Detroit, Mich., April 26-28.

National Association of Purchasing Agents will hold its seventh annual convention at Exposition Park, Rochester, N. Y., May 13-20. Secretary, S. C. McLeod, 130 W. 42nd St., New York City.

National Foreign Trade Council will hold its annual meeting May 10-12 at Philadelphia, Pa.

Mining Society of Nova Scotia will hold its annual meeting May 15, at Sydney, N. S., Canada. Secretary, E. C. Hanrahan, Sydney, N. S.

American Society for Testing Materials will hold its twenty-fifth annual meeting June 26 to July 1, 1922, at Atlantic City, N. J., with headquarters at the Chalfonte-Haddon Hall Hotel. Assistant treasurer, J. K. Rittenhouse, Engineers' Club Bldg., Philadelphia, Pa.

The twenty-seventh annual convention of the **Illinois and Wisconsin Retail Coal Dealers' Association** will be held at the Hotel Highland, Delavan Lake, Delavan, Wis., June 13, 14, 15. Secretary I. L. Runyan, Chicago, Ill.

American Society of Mechanical Engineers will hold its annual meeting May 8 to 10 at Atlanta, Ga. Secretary, C. W. Rice, 29 West 39th St., New York City.

Indiana Retail Coal Merchants' Association will hold its annual meeting April 26 and 27 at the Severin Hotel, Indianapolis, Ind. Secretary, R. R. Yeagley, Fidelity Trust Bldg., Indianapolis, Ind.

The annual convention of the **Pennsylvania Retail Coal Merchants' Association** will be held at the Stacy-Trent Hotel, Trenton, N. J., June 7 and 8.

Retail Coal Dealers' Association of Texas. Seventeenth annual convention at Greenville, Tex., May 15 and 16. Banquets on both nights will be tendered the association, that on Wednesday night being given by the Greenville Chamber of Commerce and on Thursday by the Wholesale Coal Men. Secretary, C. R. Goldman, Dallas.